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- days to acceptance: 56
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- Scopus CiteScore 2024: 2.9
- Scopus SJR 2024: 0.332
- Scopus SNIP 2024: 1.196

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Engineering, Technology & Applied Science Research

Vol. 16 No. 1 (2026): February, 2026

A Comparative Analysis of DeepDentalNet: An AI-Assisted Voxel-Based Segmentation of Sinus, Mandibular Canal, and Missing Tooth Regions in CBCT-Based Implant Planning

Rajashree Nambiar, Raghu Nanjundegowda
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30685-30690 | February 2026 | https://doi.org/10.48084/etasr.14124
Abstract | PDF

Integrating Decision Support Systems with Service Quality: An IT-Driven Approach to Patient Satisfaction in Indonesian Inpatient Facilities

Muchamad Zainul Rohman, Nor Suzylah Sohaimi, Mohd Nazaruddin Yusoff
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30691-30702 | February 2026 | https://doi.org/10.48084/etasr.14638
Abstract | PDF

Detecting Zero-Day Attacks Using Deep Learning with Pelican Optimization Algorithm in IIoT Environments

Khalid Ammar, Mohamad Khairi Ishak
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30703-30709 | February 2026 | https://doi.org/10.48084/etasr.13778
Abstract | PDF

An Improved LNN–ACO Framework with Optimal Feature Selection for Breast Tumor Detection

Neeraja Sappa, Greeshma Lingam
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30710-30715 | February 2026 | https://doi.org/10.48084/etasr.14070
Abstract | PDF

A Hybrid BERT-CNN with Multihead Self-Attention for Automated Cyberbullying Detection

Meruert Yerekesheva, Oxana Akhmetova, Assel Kaziyeva, Daniyar Sultan, Aigerim Toktarova, Rustam Abdrakhmanov, Tolep Abdimukhan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30716-30724 | February 2026 | https://doi.org/10.48084/etasr.12741
Abstract | PDF

A Systematic Review of Trustworthy and Explainable AI Frameworks for Motor Imagery-Based Brain-Computer Interfaces in Robotic Control Systems

Aya A. Abdullah, Khamis A. Zidan, A. S. Albahri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30725-30736 | February 2026 | https://doi.org/10.48084/etasr.14778
Abstract | PDF

A Wearable Footwear System with Visual and Tactile Cueing for Freezing of Gait Management across ON and OFF States in Parkinson's Disease

M. U. Anusha, K. Uma Rani, Kishor Manohar Rao, S. C. Nemichandra, Jayashree Ramesh, Purohit Saraswathi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30737-30744 | February 2026 | https://doi.org/10.48084/etasr.14512
Abstract | PDF

A Performance Comparison of the Extended Kalman Filter and the Unscented Kalman Filter for Photovoltaic Power Output Forecasting

Rizky Amalia Sinulingga, Teguh Herlambang; Puguh Triwinanto; Zuraini Othman, Ariff Idris, Norazlin Mohammed, Gagas Gayuh Aji, Mochammad Romli Arief
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30745-30750 | February 2026 | https://doi.org/10.48084/etasr.13866
Abstract | PDF

A Deviation-Based Framework for Unified Community and Anomaly Detection in Social Networks

Hedia Zardi, Sarah Alharbi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30751-30758 | February 2026 | https://doi.org/10.48084/etasr.15195
Abstract | PDF

Mineralogical and Geophysical Properties of Peat Soil for Sustainable Urban Development in South Kalimantan, Indonesia

Simon Sadok Siregar, Tetti Novalina Manik, Nur Maulida, Tarisa Ananda, Ninis Hadi Haryanti, Rusdiansyah, Sudarningsih Sudarningsih
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30759-30767 | February 2026 | https://doi.org/10.48084/etasr.13572
Abstract | PDF

An Artificial Intelligence Driven Optimal Deep Belief Network Model for Malware Classification on IoT-Cloud Environment

Khalid Ammar, Mohamad Khairi Ishak
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30768-30773 | February 2026 | https://doi.org/10.48084/etasr.13929
Abstract | PDF

Sharif: Edge Computing and Energy Consumption Optimization for UAVs at Various Altitudes

Mohamed Benaly, Azzedine El Mrabet, Hajar El Karch, Rachid El Gouri, Abdelkader Mezouari, Laamari Hlou
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 30774-30780 | February 2026 | https://doi.org/10.48084/etasr.11413
Abstract | PDF

Feature Flag Misconfiguration Vulnerabilities in Microservices Penetration Testing: Analysis, Impact, and Remediation

Ahmad Hussein Al Omari, Ahmad Alshanty
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30781-30786 | February 2026 | https://doi.org/10.48084/etasr.15014
Abstract | PDF

A Numerical Investigation of the Multiphase Filtration Process Considering Medium and Phase Compressibility

Zokhidjon Kaytarov, Vladimir Burnashev, Bekzodjon Fayziev, Zuraida Alwadood, Azamat Jumayev, Odil Khaydarov, Gafur Namazov
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30787-30794 | February 2026 | https://doi.org/10.48084/etasr.14097
Abstract | PDF

Performance Evaluation of Semi-Flexible Concrete by Laboratory and In-Situ Testing

Van Du Nguyen, Van Phuc Le, Thanh Nhan Phan, Van Tuong Tran
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30795-30800 | February 2026 | https://doi.org/10.48084/etasr.15194
Abstract | PDF

A Comparative Study of FF-PID and Fuzzy-PID Control for Anode Pressure Stability in PEM Fuel Cells

Akhmad Fahruzi, Katherin Indriawati, Mat Syai'in
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30801-30807 | February 2026 | https://doi.org/10.48084/etasr.14724
Abstract | PDF

Federated LSTM-LRP Networks with SMOTE and LIME for Interpretable Gait Classification

O. Pushpalatha, R. Premkumar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30808-30814 | February 2026 | https://doi.org/10.48084/etasr.14598
Abstract | PDF

Curriculum-Aware Contrastive Learning Bi-Directional Gated Recurrent Unit for Student Learning Course Recommendation and Classification

Joshi Vinay Kumar, Dahlia Sam
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30815-30821 | February 2026 | https://doi.org/10.48084/etasr.14369
Abstract | PDF

Enhancing Wear Resistance of Brass Composites Using Fly Ash Reinforcement: A Specific Weight Loss Study

Aminnudin Aminnudin, Heru Suryanto, Che Mohd Ruzaidi Ghazali, Danni Dwi Setiawan

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30822-30828 | February 2026 | https://doi.org/10.48084/etasr.13243
Abstract | PDF

Improving Landslide Susceptibility Mapping via Non-Landslide Sampling Strategies

Israa Fadhil Ibraheem, Mastura Azmi, Muhammad Wafiy Adli Ramli
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30829-30834 | February 2026 | https://doi.org/10.48084/etasr.14523
Abstract | PDF

Comparative Flexural Behavior of Precast Beam Joint Loop and Loop-Pin Models under Static Loads

Israel Padang, Rudy Djamaluddin, Herman Parung
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30835-30842 | February 2026 | https://doi.org/10.48084/etasr.15591
Abstract | PDF

Formal Abstraction of Program Slices for Specification and Requirement Extraction Using Object-Z

K. S. Aparna, R. N. Kulkarni
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30843-30851 | February 2026 | https://doi.org/10.48084/etasr.13285
Abstract | PDF

A Federated LSTM Autoencoder Framework for Privacy-Preserving Intrusion Detection in V2X Networks

B. Vishwanath, Chandrasekhar P. Reddy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30852-30858 | February 2026 | https://doi.org/10.48084/etasr.13121
Abstract | PDF

Lightweight Hybrid Feature Engineering and Fusion with Variational Autoencoder and XGBoost for Nutritional Data Classification

Wiwien Hadikurniawati, Kristoko Dwi Hartomo, Irwan Sembiring
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30859-30868 | February 2026 | https://doi.org/10.48084/etasr.15310
Abstract | PDF

Federated and Reinforcement Learning Integration for Distributed Energy Optimization in Wireless Sensor Networks

R. Nivyashree, H. B. Pramod
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30869-30874 | February 2026 | https://doi.org/10.48084/etasr.14994
Abstract | PDF

Enhanced Sepsis Prediction Using Ensemble Learning with SMOTE-Based Data Balancing and Stratified Validation

N. Smitha, R. Tanuja, S. H. Manjula
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30875-30879 | February 2026 | https://doi.org/10.48084/etasr.14071
Abstract | PDF

Fuzzy-BERT Synergy: A Multilayer Framework for Emotion Narrative in Hybrid Text Classification Models

Artiarini Kusuma Nurindiyani, Mochamad Hariadi, Erma Suryani, Didit Prasetyo, Nugrahardi Ramadhani
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30880-30885 | February 2026 | https://doi.org/10.48084/etasr.14489
Abstract | PDF

Evaluation of the Performance of GNSS Antennas and Modules for Electronic Navigation Seals under Challenging Operating Conditions

Altay Aitmagambetov, Sabyrzhan Zhumagali, Aigul Kulakayeva, Leila Sultanbekova, Anatoly Samsonenko
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30886-30897 | February 2026 | https://doi.org/10.48084/etasr.15226
Abstract | PDF

A Mechanical Investigation on the Recovery of Thermally Damaged Self-Compacting Concrete Using Magnetized Water

Majed Rashed, MZA Mohd Zahid, B. H. Abu Bakar, Z. F. Mohamed Jaafar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30898-30905 | February 2026 | https://doi.org/10.48084/etasr.15165
Abstract | PDF

Cost-Sensitive Fake Profile Detection in Online Social Networks Using Random Forest Feature Selection and LightGBM

Hedia Zardi, Raneem Alreshoodi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30906-30912 | February 2026 | https://doi.org/10.48084/etasr.15297
Abstract | PDF

A Deep Visual Approach to Student Engagement Analysis Using Affective and Behavioral Cues

Fatima Zahra Jobbid, Aissam Berrahou, Hassan Berbia
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30913-30918 | February 2026 | https://doi.org/10.48084/etasr.13816
Abstract | PDF

Mechanical and Rheological Behavior of High-Density Polyethylene under the Reversible Crosslinking Method and Comparison to a Conventional Method

Riadh Nemri, Said Bouhelal, Eleftheria Roumeli, Konstantinos Chrissafis, Dimitrios Bikiaris, Lhadi Otmani
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 30919-30925 | February 2026 | https://doi.org/10.48084/etasr.14223
Abstract | PDF

The Gorilla Troops Optimizer-Based Ensemble Deep Learning Model for Real-Time Zero-Day Attack Detection and Classification

J. Vanitha, P. Anandababu
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30926-30931 | February 2026 | https://doi.org/10.48084/etasr.12210
Abstract | PDF

Evaluation of Road Safety at School Zones Using the iRAP Star Ratings for Schools Tool: The Case Study of Arnavutkoy, Istanbul

Muna Abdelbaqi, Sepanta Naimi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30932-30939 | February 2026 | https://doi.org/10.48084/etasr.12491
Abstract | PDF

SHAP-Based Explainability for Local and Global Insights in Alzheimer's Detection

Shraddha Khanapur, Jyothi S. Nayak, B. S. Rajeshwari, M. Namratha, Chirag B. Bharadwaj, Raghav Bhardwaj
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30940-30947 | February 2026 | https://doi.org/10.48084/etasr.13932
Abstract | PDF

An Advancing Financial Credit Risk Forecasting Model Using Graph Convolutional Networks for Sustainable Economic Analysis

Elvir Akhmetshin, Ilyos Abdullayev, Samariddin Makhmudov, Elena Klochko, Mokhichekhra Boltaeva
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30948-30953 | February 2026 | https://doi.org/10.48084/etasr.15057
Abstract | PDF

Interpretable Machine Learning for Price Index Forecasting: A Case Study with Rolling Windows and SHAP

Ali Ben Mrad, Hamad Mohammad Alsowayyan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30954-30962 | February 2026 | https://doi.org/10.48084/etasr.14863
Abstract | PDF

A Two-Stream Convolutional Attention Network for Hand Gesture Recognition and Classification

Chaovarit Janpirom, Bunthida Chunngam, Tanchanok Phewkham, Aekkarat Suksukont
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30963-30970 | February 2026 | https://doi.org/10.48084/etasr.14865
Abstract | PDF

Optimization of Material and Operational Costs in Electromagnet Design

Areg Grigoryan, Armine Avetisyan, Lida Harutyunyan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30971-30977 | February 2026 | https://doi.org/10.48084/etasr.13826
Abstract | PDF

Comparative Development of BioMedCLIP for Enhanced Biomedical Data Integration

Praveen Pandey, Hiyaa Malik, Sofia Singh, Dipti Theng, Urvashi Agrawal, Raj Kumar, Sanjay Balwani, Anoop Kumar Shukla
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30978-30983 | February 2026 | https://doi.org/10.48084/etasr.15242
Abstract | PDF

A Multi-Objective Optimization and Sensitivity-Driven Decision Framework for Split-Output Two-Stage Helical Gearboxes Using NSGA-II and MCDM Methods

Duc Binh Vu, Van Thanh Dinh, Van Tung Nguyen, Thi Thu Huong Truong, Thi Phuong Thao Tran, Thanh Hien Bui
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30984-30990 | February 2026 | https://doi.org/10.48084/etasr.14407
Abstract | PDF

Enhancing Multiclass Dementia Detection with EEG Signals: A Feature-Driven LSTM Approach

Rageshri Bakare, Virendra Shete, Magda Tsolaki, Spiros Nikolopoulos
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30991-30996 | February 2026 | https://doi.org/10.48084/etasr.15129
Abstract | PDF

An Experimental Investigation on Composition 4 Linear Shaped Charges for Structural Steel Cutting

Peerasak Aemlaor, Kitsada Sripoeon
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 30997-31003 | February 2026 | https://doi.org/10.48084/etasr.14294
Abstract | PDF

Analyzing Function Overloading as a Mechanism for Compile-Time Polymorphism in Modern C++

Mohammad Bani Younes, Omer Abu Shqeer, Issa Alsmadi, Njood Aljarrah
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31004-31008 | February 2026 | https://doi.org/10.48084/etasr.15409
Abstract | PDF

Optimal IIR Filter Design and FPGA Realization

Arunjyothi Eddla, V. Y. Jayasree Pappu
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31009-31014 | February 2026 | https://doi.org/10.48084/etasr.12837
Abstract | PDF

Semantic-Enriched Latent Factor Models with Sparse Data for Enhanced Performance of E-Commerce Recommender Systems

Jaeni Jaeni, Purwanto Purwanto, Budi Warsito
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31015-31021 | February 2026 | https://doi.org/10.48084/etasr.14158
Abstract | PDF

Federated Time-Bound Blockchain-Based Revocation with Ciphertext-Policy Attribute-Based Encryption and Redundant Shard Reassembly

Namrata Naikwade, Shafi Pathan, Prashant Dhotre
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31022-31027 | February 2026 | https://doi.org/10.48084/etasr.13552
Abstract | PDF

DAFPD: The Dynamic and Adaptive Framework for Enhanced Phishing Detection Techniques

Sudhir Kumar Gupta, Sangeeta Srivastava, Vandana Gandotra
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31028-31034 | February 2026 | https://doi.org/10.48084/etasr.12487
Abstract | PDF

A Numerical Study on Natural Ventilation Using a Horizontal Solar Chimney with a Bell-Mouth Inlet and Major Geometric Modifications

Do Ngoc Kien, Nguyen Minh Phu, Thi Tam Thanh Nguyen
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31035-31042 | February 2026 | https://doi.org/10.48084/etasr.14861
Abstract | PDF

Developing a Unified Cyber Risk Management Framework Using Semantic Technologies and Structured Modeling Approaches

Youssef El Marzak, Abdelilah Chahid, Sophia Faris, Khalifa Mansouri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31043-31051 | February 2026 | https://doi.org/10.48084/etasr.13844
Abstract | PDF

Fatigue Behavior of Buton Asphalt Modified with Marine Fuel Oil and Styrene-Butadiene Rubber

I Dewa Made Alit Karyawan, Hasyim Hasyim, I Nyoman Arya Thanaya, Ervina Ahyudanari
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31052-31058 | February 2026 | https://doi.org/10.48084/etasr.14276
Abstract | PDF

Topology-Aware Robustness Prediction: K-Hop Entropy Analysis of D-Wave Zephyr Architectures

Csaba Biro
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31059-31065 | February 2026 | https://doi.org/10.48084/etasr.14077
Abstract | PDF

An Improved Medical Image Fusion for Efficient Diagnostic Imaging Using Deep Learning and Gradient-Based Quality Assessment

Walid El-Shafai, Ahmad Taher Azar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31066-31075 | February 2026 | https://doi.org/10.48084/etasr.10622
Abstract | PDF

Position and Orientation Control of Remotely Operated Vehicles Utilizing Radial Basis Function Neural Networks to Overcome Underwater Environmental Disturbances

Hendi Purnata, Moh. Khairudin, Sarwo Pranoto, Galih Mustiko Aji, Nanda Pranandita
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31076-31082 | February 2026 | https://doi.org/10.48084/etasr.14930
Abstract | PDF

The Influence of the Geometry of the Innovative Spiral Drill Design on the Cutting Process and Tool Durability

Galiya Itybayeva, Zhanara Mussina, Aizhan Taskarina, Leila Mussina, Dinara Iskakova, Tatyana Lub, Ruslan Kussainov, Sergey Miller, Assylbek Kassenov
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31083-31093 | February 2026 | https://doi.org/10.48084/etasr.15292
Abstract | PDF

An Automated OCT-Based Glaucoma Detection with 3-D ResNet18 and a Convolutional Block Attention Module

Venkateswara Rao Kalidindi, Harinadh Varikuti, Manikanta Kalyan Choppa, Priyanth Dunna, Venkat Rammohan Gummalla, Sireesha Malla
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31094-31100 | February 2026 | https://doi.org/10.48084/etasr.14835
Abstract | PDF

Mathematical Modeling and Dynamic Simulation of the Nerinjipettai Hydropower Plant Using MATLAB/Simulink

D. Santhosh Kumar, V. Sujatha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31101-31107 | February 2026 | https://doi.org/10.48084/etasr.13766
Abstract | PDF

Secure and Efficient Container Scheduling in Multi-Cloud Using an Elliptic Curve-Based Digital Signature Algorithm

Komala Rangappa, Arun Kumar Banavara Ramaswamy, Shreyas Arun Kumar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31108-31116 | February 2026 | https://doi.org/10.48084/etasr.14329
Abstract | PDF

ANSYS-Based Simulation and Machine Learning Techniques for Forensic Classification of Knife Wounds

Mule Laxmidevi Ramanaiah, D. Manju

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31117-31122 | February 2026 | https://doi.org/10.48084/etasr.15283
Abstract | PDF

Hybrid Autoencoder and Isolation Forest for IoT Anomaly Detection with a Novel Model

Mohamed Bachar, Azeddine Khiat, Kamal El Guemmat
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31123-31129 | February 2026 | https://doi.org/10.48084/etasr.15288
Abstract | PDF

A Crowding Distance-Driven Adaptive Genetic Algorithm with Multiobjective Evolutionary Optimization for Robust Attack Detection

D. Sudha, D. Ganesh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31130-31136 | February 2026 | https://doi.org/10.48084/etasr.14980
Abstract | PDF

A Comprehensive Approach to Glaucoma Detection in Retinal Fundus Images with GlaucVGL-Net

S. Z. Parveen, Pothuraju Rajarajeswari
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31137-31144 | February 2026 | https://doi.org/10.48084/etasr.12893
Abstract | PDF

Fly Ash-Based Geopolymerization for Enhancing Clayey Soils in Canal Linings: An Experimental and Numerical Analysis Using SEEP/W

Mohammad Mustafa Ahmed, Mustafa Ahmed Yousif, Amer Hasan Tahe
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31145-31151 | February 2026 | https://doi.org/10.48084/etasr.13480
Abstract | PDF

Enhancing Ship Generator Reliability by Modifying Bearings to Prevent Electrical Arcing Damage

Rukmini, Antoni Arif Priadi, Azwar Hayat
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31152-31161 | February 2026 | https://doi.org/10.48084/etasr.12085
Abstract | PDF

Hybrid CNN-LSTM and TimeGAN Models for Enhanced Energy Consumption Prediction in Smart Homes

Budoor Ahmad Allehyani, Ghader Reda Kurdi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31162-31171 | February 2026 | https://doi.org/10.48084/etasr.13179
Abstract | PDF

A Framework for the Communication and Coordination of Mamminasata BRT Services Using Social Network Analysis

Kosmas Toding, Muhammad Isran Ramli, Sakti Adji Adisasmita, Asad Abdurrahman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31172-31180 | February 2026 | https://doi.org/10.48084/etasr.15430
Abstract | PDF

Utilizing Crushed Volcanic Scoria as a Subsurface Medium for Water Storage in Arid Regions: A Comparative Laboratory Study

Hassan A. Abas
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31181-31187 | February 2026 | https://doi.org/10.48084/etasr.15501
Abstract | PDF

SRAM Design and Analysis Using TIGFET

S. Nagaleela, V. Balamurugan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31188-31193 | February 2026 | https://doi.org/10.48084/etasr.14370
Abstract | PDF

An Enhanced Hybrid LSTM–Linear Regression Framework for 90-Day Rainfall Forecasting in Rainfed Agricultural Regions

Attapol Kunlerd, Atipat Ritthiron, Jakkrit Kaewyotha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31194-31202 | February 2026 | https://doi.org/10.48084/etasr.15622
Abstract | PDF

Deep Learning Utilization for DDoS Attack Detection with Federated Learning: A Case Study on the CICDDoS2019 Dataset

Ayoub Alsarhan, Malek Barhoush, Bashar Khassawneh, Malik Al-Essa, Mohammad Aljaidi, Qais Al-Na'amneh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31203-31208 | February 2026 | https://doi.org/10.48084/etasr.14119
Abstract | PDF

NetPhish-Mix: A Multi-Modal Phishing Detection Method Utilizing URL Graphs and Page Screenshot Vision Transformer

Awwab Mohammad, N. Praveen, Pandiarajan S, R. Shreeshayana, Samudrala Jagadeesh, Anjali Raj, Basavaraj Patil, Yogesh H. Bhosale, Sanjana M. Nagaraj, D. Anil
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31209-31214 | February 2026 | https://doi.org/10.48084/etasr.15759
Abstract | PDF

A Ku-Band Dual Linear-Polarized 2×4 Microstrip Patch Subarray with a Rhombic Feed Transmission Line for Enhanced Cross-Polarization Cancellation

Riyani Jana Yanti, Aditya Inzani Wahdiyat, Muzammil Jusoh, Catur Apriono
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31215-31220 | February 2026 | https://doi.org/10.48084/etasr.15248
Abstract | PDF

Handling Class Imbalance in Federated Learning for Cyber-Physical Attack Detection

C. B. Swetha, Chetan J. Shelke
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31221-31228 | February 2026 | https://doi.org/10.48084/etasr.15034
Abstract | PDF

Investigation of the Multi-Threshold Decoding Efficiency in Wireless Communication Systems

Nurlan Tashatov, Gennady Ovechkin, Zhuldyz Sailaukyzy, Eldor Egamberdiyev, Dina Satybaldina, Gulmira Danenova, Zarina Khassenova
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31229-31240 | February 2026 | https://doi.org/10.48084/etasr.15712
Abstract | PDF

The Relation of Crowdsourced Data, Traffic Congestion Patterns, and Road Network in Samarinda City, Indonesia

Arief Hidayat, Muhammad Fadhillah Nabhan Ednolian, Mohtana Kharisma Kadri, Happy Aprilia, Umar Mustofa, Bimo Aji Widyantoro, Hijriah
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31241-31253 | February 2026 | https://doi.org/10.48084/etasr.15232
Abstract | PDF

Application of the Modified Page-Hinkley Test to Diagnose Current Sensor Faults in Induction Motor Drives

Cuong Dinh Tran, Martin Kuchar, Phuong Duy Nguyen
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31254-31262 | February 2026 | https://doi.org/10.48084/etasr.14256
Abstract | PDF

A Comparative Study of Deep Learning Models for Bitcoin Price Prediction Using NeuralProphet, RNN, and LSTM

Tan Khai Lian, Ismail Ahmad Al-Qasem Al-Hadi, Mohammad Ahmed Alomari, Mohammed Nasser Al-Andoli, Muhammed Basheer Jasser, AbdulGuddoos S. A. Gaid
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31263-31273 | February 2026 | https://doi.org/10.48084/etasr.11590
Abstract | PDF

A Two-Phase Framework with Loop Reduction and Meta-Heuristic Evaluation for Distribution Network Reconfiguration

Huynh Tuyet Vy, Ho Pham Huy Anh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31274-31284 | February 2026 | https://doi.org/10.48084/etasr.15284
Abstract | PDF

A Robust Ensemble Deep Learning Model for Lumpy Skin Disease Identification

Bain Khusnul Khotimah, Budi Dwi Satoto, Yoga Dwitya Pramudita, Deshinta Arrova Dewi, Firdatul A'yuni

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31285-31293 | February 2026 | https://doi.org/10.48084/etasr.14823
Abstract | PDF

Optimal Location and Sizing of Distributed Generation Units Using NSAGA-III with Heuristic Sampling and Restricted Mating

Huynh Tuyet Vy, Ho Pham Huy Anh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31294-31302 | February 2026 | https://doi.org/10.48084/etasr.15729
Abstract | PDF

Enhanced Badminton Stroke Recognition Using Hybrid RGB–Skeleton Features and Ensemble Learning

Farida Asriani, Azhari Azhari, Wahyono Wahyono
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31303-31309 | February 2026 | https://doi.org/10.48084/etasr.15586
Abstract | PDF

Load Balancing Optimization through Multi-Label Classification of Network Traffic Using Deep Learning in Distributed Computing Systems

Ferry Fachrizal, Al-Khowarizmi, Okvi Nugroho
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31310-31317 | February 2026 | https://doi.org/10.48084/etasr.14567
Abstract | PDF

Leveraging RSSI and RTT for Accurate Distance Prediction in Bluetooth HC-05 with Multivariate Linear Regression Model

Farid Baskoro, Rifqi Firmansyah, Wahyu S. Putro, Widi Aribowo, Aristyawan P. Nurdiansyah
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31318-31324 | February 2026 | https://doi.org/10.48084/etasr.15256
Abstract | PDF

A Numerical Investigation of the Structural Performance of Two Types of Reinforced Concrete Two-Way Slabs

Joseph, Nasruddin, Hartawan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31325-31332 | February 2026 | https://doi.org/10.48084/etasr.13682
Abstract | PDF

A Novel Approach for Criteria Weight Determination: A Case Study in Machine Ranking

Tran Van Dua
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31333-31337 | February 2026 | https://doi.org/10.48084/etasr.15778
Abstract | PDF

Adaptive Strategies for Multi-Class Disease Detection in Azadirachta Indica Using Deep Learning with Few-Shot Adaptation (DL-FSA)

H. A. Vidya, M. S. Narasimha Murthy, A. Muthu Kumar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31338-31348 | February 2026 | https://doi.org/10.48084/etasr.15752
Abstract | PDF

The Mechanical Properties of Laminated Bamboo with Different Types of Adhesive and Compression Pressures

Zulmahdi Darwis, Achmad Basuki, Muhammad Yani Bhayusukma, Stefanus Adi Kristiawan, Kuncoro Diharjo, Cahyo Hadi Wibowo, Fathony Nada Saputro, Faishal Machfudz Majid
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31349-31354 | February 2026 | https://doi.org/10.48084/etasr.15374
Abstract | PDF

A Miniaturized Dual-Band Implantable Antenna with Improved Impedance Matching via Shorting Vias and CSRRs

Herman Yuliandoko, Puji Handayani, Eko Setijadi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31355-31362 | February 2026 | https://doi.org/10.48084/etasr.15238
Abstract | PDF

A Transformer-Based Optical Character Recognition Framework with Unified Residual Recurrent Networks for Multilingual Handwritten Documents

Dadapeer, Yeresime Suresh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31363-31370 | February 2026 | https://doi.org/10.48084/etasr.15667
Abstract | PDF

An Enhanced Skin Cancer Detection Method Utilizing TriBlendNet and Deepdilated Focus U-Net

D. Manju, K. Kishore Kumar, Movva Pavani, N. V. S. Pavan Kumar, V. S. N. Murthy, Rajesh Kumar Verma, Padmini Debbarma, M. Koteswara Rao, Anand Kumar Saraswathi Rathod, Bh. Krishna Mohan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31371-31378 | February 2026 | https://doi.org/10.48084/etasr.14192
Abstract | PDF

Real-Time Conversational Analysis Using LLMs for B2B E-Commerce Customer Value Management

Irwan Andriyanto Nugroho, Kusworo Adi, Komang Budi Aryasa
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31379-31385 | February 2026 | https://doi.org/10.48084/etasr.15797
Abstract | PDF

RetinoFusionNet: A Scalable and Interpretable Vision Transformer Framework for Diabetic Retinopathy Detection

K. V. Shanthala, Niranjan C. Kundur
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 31386-31392 | February 2026 | https://doi.org/10.48084/etasr.15311
Abstract | PDF

Wear Performance Analysis of UHMWPE for Total Knee Arthroplasty

A Comparative Study of Materials from Different Sources

D. Darmanto, M. A. Wahid, P. W. Anggoro, R. Ismail, R. Novriansyah, I. N. Jujur, Y. Setyoadi, B. W. B. Santoso, Y. Stefanditya
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31393-31400 | February 2026 | https://doi.org/10.48084/etasr.15247
Abstract | PDF

An Implementation of Ensemble and Extended Filtering Methods to Estimate Drag and Yaw Coefficients on Amphibious Aircraft Trajectories

Teguh Herlambang, Zuraini Othman, Rachman Sinatriya Marjianto, Sharifah Sakinah Syed Ahmad, Sayuti Syamsuar, Sulistiya, Mohd Sanusi Azmi, Beny Halfina, Ilham Akbar Adi Satriya
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31401-31407 | February 2026 | https://doi.org/10.48084/etasr.14116
Abstract | PDF

A Convolutional Neural Network Model with Feature Fusion for Sperm Morphology Classification

Firman Tempola, Ardiansyah, Munazat Salmin, Leonardo Petra Refialy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31408-31413 | February 2026 | https://doi.org/10.48084/etasr.15363
Abstract | PDF

Unsupervised Identification of Post-Rainfall Behavior in a Medium Reservoir Using Feature-Engineered Clustering

Sakchan Luangmaneerote, Anyawee Chiwachirakhamporn, Jeeranut Tasuntia
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31414-31421 | February 2026 | https://doi.org/10.48084/etasr.15335
Abstract | PDF

Eggshell Crack Classification Using a Hybrid Texture-Color Descriptor with Machine Learning Methods

Aji Setiawan, Suzuki Syofian, Adam Arif Budiman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31422-31429 | February 2026 | https://doi.org/10.48084/etasr.15450
Abstract | PDF

Silver Nanoparticle-Modified Screen-Printed Carbon Electrodes for the Electrochemical Sensing of the Prostate-Specific Antigen

Yahia F. Makableh, Tamara Athamneh, Rama Matar, Ahmad Abu-Baker, Sara Hijazi, Aws Al-Qaisi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31430-31436 | February 2026 | https://doi.org/10.48084/etasr.13259
Abstract | PDF

Optimizing Lane Detection in Autonomous Vehicles Using Cascading Attention Mechanisms in DeepLabv3+

Dewiani, Indrabayu, Muhammad Abdillah Rahmat, A. Ichsan Mudatsir Lukman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31437-31448 | February 2026 | https://doi.org/10.48084/etasr.15315
Abstract | PDF

Spatial Analysis of Evacuation Sites for Tsunami Mitigation in Banyuwangi City

Fadly Usman, Rosilawati Zainol, Tri Mulyani Sunarharum, Atrida Hadianti, Turniningtyas Ayu Rachmawati, Sugeng Santoso, Mukhamad Fathoni
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31449-31456 | February 2026 | https://doi.org/10.48084/etasr.15201
Abstract | PDF

BreastCancerDiagNet - Transformer-Based Clinical Question Generation for Automated History Taking

Maleeha Fathima, Moulana Mohammed
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31457-31463 | February 2026 | https://doi.org/10.48084/etasr.14966
Abstract | PDF

Advancement in Diabetic Retinopathy Prediction: Utilizing Voting Classifiers Techniques for Early Detection

Choon Kit Chan, P. Kavitha, A. Kalaivani, Goutami Chenumalla, A. Vanathi, K. H. Koushika, G. Likhitha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31464-31468 | February 2026 | https://doi.org/10.48084/etasr.14526
Abstract | PDF

Predicting Student Performance Using Subtractive Clustering Fuzzy C-Means and Multiple Linear Regression

Tengku Zatul Hidayah Tengku Petra, Mohd Juzaiddin Ab Aziz, Marshima Mohd Rosli
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31469-31474 | February 2026 | https://doi.org/10.48084/etasr.14188
Abstract | PDF

An Experimental Evaluation of Low-Cost MQ-Series LPG Sensors under Varying Temperature Conditions

Lukmanul Khakim, Ida Afriliana, Eko Budihartono, Amin Suharjono
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31475-31483 | February 2026 | https://doi.org/10.48084/etasr.15843
Abstract | PDF

A Lightweight Denoising Convolutional Neural Network for On-Device Artifact Suppression

Naeem Ahmed, R. Navya, Arun Ananthanarayanan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31484-31489 | February 2026 | https://doi.org/10.48084/etasr.15428

Abstract | PDF

An Intelligent Multi-Head Attention-Driven Temporal Convolutional Architecture for Intrusion Detection in Wireless Sensor Networks

M. Pradeepa, R. Ponnusamy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31490-31494 | February 2026 | https://doi.org/10.48084/etasr.15044
Abstract | PDF

Optimal Scheduling of EV Charging Stations with Integrated Renewable Resources Using the Mantis Search Algorithm

Khoa Truong Hoang, Hung Nguyen Duc, Dieu Ngoc Vo
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31495-31501 | February 2026 | https://doi.org/10.48084/etasr.14981
Abstract | PDF

Investigating High Intensity Thermal Faults in Ester-Based Transformer Oil: A Dissolved Gas Analysis Approach

Manjusha S. Nambiar, C. N. Murthy, Nitin Shingne
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31502-31508 | February 2026 | https://doi.org/10.48084/etasr.15023
Abstract | PDF

Enhancing the Prediction of Multiple Ozone Metrics Using Genetic Algorithm-Based Feature Selection for the Multi-Target Regression of the Environmental AQ-Bench Dataset

N. Mohamed Abdul Kader Jailani, Geeta C. Mara
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31509-31518 | February 2026 | https://doi.org/10.48084/etasr.14985
Abstract | PDF

Word Recognition in Degraded Historical Documents Using Deep Neural Networks

B. K. Rajithkumar, H. S. Mohana, B. V. Uma, M. Govinda Raju
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31519-31524 | February 2026 | https://doi.org/10.48084/etasr.15235
Abstract | PDF

A Hybrid Deep Learning Model with Gated Representation for the Detection of Offensive Text in Noisy Social Media Environments

Praneetha Garagadakuppe Nanjundappa, Kamalakshi Naganna
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31525-31532 | February 2026 | https://doi.org/10.48084/etasr.14025
Abstract | PDF

Quantum-Inspired Genetic Programming for Single-End Line-to-Ground Fault Location in Transmission Lines with Resilience to High Impedance Faults

Mohammed H. Al-Qaraghui, Zienab R. Khaleel, Mohamed S. Zaky, Mahmoud M. Elgamasy, Adel M. Sharaf, Asmaa A. Rady

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31533-31539 | February 2026 | https://doi.org/10.48084/etasr.12363
Abstract | PDF

Metaheuristic-Driven Feature Selection for Machine Learning-Based Credit Scoring

Chinh Xuan Pham, Huynh Ngoc Trinh, Long Quoc Tran
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31540-31548 | February 2026 | https://doi.org/10.48084/etasr.15590
Abstract | PDF

An Intelligent Multi-Drone Navigation-Based Trajectory Prediction and Classification Framework Using a Hybrid Recurrent Neural Network Model

Samah Alzanin
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31549-31554 | February 2026 | https://doi.org/10.48084/etasr.16258
Abstract | PDF

An Ensemble Voting-Based Framework for Maintenance Decision Support in Mining Centrifuges

Doaa Ahmad Alqaraleh, Sami Salama Hussen Hajjaj, Hassan Mohamed, Mohd Radzi Aridi, Mohd Zafri bin Baharuddin
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31555-31563 | February 2026 | https://doi.org/10.48084/etasr.15281
Abstract | PDF

MYPE-Navigator: A Scalable Web-Based Financial Literacy Platform for Micro and Small Enterprises

Design, Implementation, and Empirical Validation in Emerging Economies

Xiomara Picon, Claudia Palpan, Jose Santisteban
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31564-31570 | February 2026 | https://doi.org/10.48084/etasr.15356
Abstract | PDF

Processing of Technogenic Gold-Bearing Raw Materials Using Preliminary Energy-Efficient Microwave Treatment

Ruslan Sapinov, Zhanserik Shoshay, Marzhan Sadenova, Dinara Kassymova
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31571-31578 | February 2026 | https://doi.org/10.48084/etasr.15638
Abstract | PDF

A Financial Fraud Detection Model Using Artificial Intelligence

Khaleed Omair Alotaibi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31579-31584 | February 2026 | https://doi.org/10.48084/etasr.15892
Abstract | PDF

An Intelligent Optimization-Based Deep Belief Network for Fraud Detection in Financial Transaction Systems

Hafis Hajiyev, Emil Hajiyev, Mirzobek Avezov, Samariddin Makhmudov, Dilora Abdukhalikova
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31585-31590 | February 2026 | https://doi.org/10.48084/etasr.15346
Abstract | PDF

Contextual Query Expansion: Transforming Question Answering with an MLM-Based Approach Using A Transformer Model

Muhammad Manzoor Faisal, Javed Ferzund, Ahmad Shaf, Afnan Aldhahri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31591-31599 | February 2026 | https://doi.org/10.48084/etasr.15306
Abstract | PDF

Enhancing Aspect-Based Sentiment Analysis with Dynamic Few-Shot Prompting for Large Language Models

Mohammed Ziaulla, Arun Biradar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31600-31608 | February 2026 | https://doi.org/10.48084/etasr.14875
Abstract | PDF

Real-Time Ergonomic Assessment with Fuzzy Logic and RGB-D Sensors

Celia Francisco Martinez, Fabiola Sanchez Galvan, Horacio Bautista Santos, Omar Vazquez Estrada, Dany Ivan Martinez De La Cruz, Francisco Gerardo Ponce del Angel
Engineering, Technology & Applied Science Research
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Abstract | PDF

Lightweight Vision Models for Egg Fertility Detection

Earl John Flores
Engineering, Technology & Applied Science Research
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Abstract | PDF

Detection of Non-Technical Losses in Electrical Metering Systems in Northern Lima Using Predictive Modeling and Business Intelligence

Dayanna Perez, Miguel Flores, Pedro Castaneda, Jose Santisteban, Alejandra Onate-Andino
Engineering, Technology & Applied Science Research
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Abstract | PDF

Ensemble Learning Approaches for Cardiovascular Disease Prediction

Ahmad Muzammil Halim, Marshima Mohd Rosli, Norzilah Musa, Nurain Ibrahim
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31632-31637 | February 2026 | https://doi.org/10.48084/etasr.14877
Abstract | PDF

Adaptive Load Frequency Control for Interconnected Grids Using Ant Lion Optimization

Manoj Kumar Kar, Chetan Sharma, Jogeswara Sabat, Jnanaranjan Mohanty, Jeygopi Raman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31638-31646 | February 2026 | https://doi.org/10.48084/etasr.13641
Abstract | PDF

Adaptive Wavelet Transform Techniques for Optimal Noise Reduction in Computed Tomography Scans

Lassaad Ben Ammar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31647-31652 | February 2026 | https://doi.org/10.48084/etasr.15340
Abstract | PDF

A Deep Learning–Based Framework for Dataset Creation and Sentiment Classification of English–Bengali Code-Mixed Texts

Dalia Barua, Tarandeep Singh Walia
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31653-31661 | February 2026 | https://doi.org/10.48084/etasr.15475
Abstract | PDF

Creating a Decentralized Integrated Performance Index Water Supply System: An Examination of SiPAS in the Brantas River Basin

Ussy Andawayanti, Runi Asmaranto, M. Amar Sajali, Ery Suhartanto, Mustafa Mukti Hidayat, Rizki Tri Utami
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31662-31669 | February 2026 | https://doi.org/10.48084/etasr.13216
Abstract | PDF

A Reliability-Based Assessment and Design Calibration of the Modified Strut-and-Tie Model for Steel Fiber Reinforced Concrete Deep Beams

Bac An Hoang, Quynh Nhu Nguyen-Thi, Van Phuc Tran
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31670-31677 | February 2026 | https://doi.org/10.48084/etasr.15203
Abstract | PDF

The Effectiveness of Oxbow Lake Restoration as a Flood Reduction Nature-Based Solution (NbS) in the Kapuas River Basin, Indonesia

Henny Herawati, Aji Ali Akbar, Eko Yulianto, Jajat Sudrajat, Budi Utomo, Yus Sholva, Entin Hidayah, Azmeri, Juliastuti
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31678-31683 | February 2026 | https://doi.org/10.48084/etasr.15737
Abstract | PDF

Prediction of Landslides Using Extracted Environmental and Topographic Features from Multispectral Satellite Images

Chethana Vasudevaiah, Rashmi Shivaswamy, Rajeshwari Janthakal
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 31684-31690 | February 2026 | https://doi.org/10.48084/etasr.15155
Abstract | PDF

Performance Analysis of a Solar-Powered DC System toward Sustainable Cooling and Heating in a Hot Arid Climate: A Madinah Case Study

Emad Alrwishdi, Saleh Al Ahmadi, Abdulrahman Al Kassem, Azeddine Draou
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31691-31698 | February 2026 | https://doi.org/10.48084/etasr.15296
Abstract | PDF

A Baseline Evaluation of OCR Segmentation and Classification Methods for Printed Javanese Script

Anastasia Rita Widiarti, Susilawati Endah Peni Adji, Fransisca Tjandrasih Adji, Gerardus Kristha Bayu Indraputra, Yulius Agung Trisnanto, FX Bima Yudha Pratama
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31699-31705 | February 2026 | https://doi.org/10.48084/etasr.15502
Abstract | PDF

Dynamic Simulation and Harmonic Evaluation of a Hybrid Multilevel Inverter for Photovoltaic Systems Using Pulse Width Modulation Strategies

Abdul Sattar Larik, Mukhtiar Ahmed Mahar, Mariam Memon
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31706-31713 | February 2026 | https://doi.org/10.48084/etasr.15529
Abstract | PDF

Privacy-Preserving and Gas-Efficient Car Service Record Management Using Adaptive User-Resilient CKKS Homomorphic Encryption and Blockchain

S. Yasmin, G. Shree Devi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31714-31721 | February 2026 | https://doi.org/10.48084/etasr.15498
Abstract | PDF

Predictive Maintenance of Mining Centrifuges Using Machine Learning and Deep Learning Models

Doaa Ahmad Alqaraleh, Sami Salama Hussen Hajjaj, Hassan Mohamed, Mohd Radzi Aridi, Mohd Zafri Bin Baharuddin
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31722-31732 | February 2026 | https://doi.org/10.48084/etasr.15162
Abstract | PDF

Development of Barriers and Strategies for Implementing Lean Supply Chain Management in Coastal Wall Construction Projects

Arif Luqman Hakim, Rosmariani Arifuddin, M. Asad Abdurrahman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31733-31740 | February 2026 | https://doi.org/10.48084/etasr.15449
Abstract | PDF

Designing an Ontology-Based Framework for ISO 27002-Based Information Security Risk Management

Youssef El Marzak, Lamia Moudoubah, Abdelilah Chahid, Sophia Faris, Khalifa Mansouri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31741-31747 | February 2026 | https://doi.org/10.48084/etasr.15794
Abstract | PDF

An Analysis on the Cutting Force Coefficient in Al2O3/MoS2 Hybrid Nanofluid MQCL Hard Milling of Hardox 500 Steel

Long Tran The
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31748-31755 | February 2026 | https://doi.org/10.48084/etasr.14586
Abstract | PDF

River Flow Estimation under Future Climate Conditions: The Case Study of the Nith River Basin Using SWAT Modeling Tools

Rahman Mohammad Hafizur, Seidou Ousmanne, Rana Md. Sohel
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31756-31762 | February 2026 | https://doi.org/10.48084/etasr.12299
Abstract | PDF

An Implementation of Deep Convolution Segmentation for Crack Detection in Concrete

Faqih Ma'arif, Han Ay Lie, Slamet Widodo, Zhengguo Gao, Fardiansyah Nur Aziz, Maris Setyo Nugroho
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31763-31769 | February 2026 | https://doi.org/10.48084/etasr.15569
Abstract | PDF

Design and Development of Motion Control for a Metal Waste Cleaning-24 Robot Using ESP32 and PID Control

La Ode Muhammad Ali, Andi Amijoyo Mochtar, Fauzan Djamaluddin
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31770-31778 | February 2026 | https://doi.org/10.48084/etasr.15660
Abstract | PDF

Energy Efficiency Enhancement in Mini-Hydro-Power Pumping Systems Using the Improved Voltage Balancing of Modular Multilevel Converters

Dao Tuan Anh, Nguyen The Vinh, Van Thang Nguyen
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31779-31787 | February 2026 | https://doi.org/10.48084/etasr.15151
Abstract | PDF

A Review on Soft Planar Mechanisms: Modeling and Actuation for Robotic Applications

Eddie Gazo-Hanna
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31788-31794 | February 2026 | https://doi.org/10.48084/etasr.15701
Abstract | PDF

Nickel Extraction from Kolaka Laterite Ore: A HCl Leaching Optimization Method Using the BBD-RSM and Recovery via Oxalate Precipitation

Yatim Lailun Ni'mah, Rasikha Alifah Hernanda, Suprapto Suprapto
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31795-31801 | February 2026 | https://doi.org/10.48084/etasr.15251
Abstract | PDF

Machine Learning for Covariate-Driven Changes in Weibull Scale Parameter

Muhammad Fitran Ramadhan, Nabil De Nozyra, Fahrial Al Akbar Warsito Putra, Surya Michrandi Nasution, Reza Rendian Septiawan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31802-31808 | February 2026 | https://doi.org/10.48084/etasr.15186
Abstract | PDF

Adaptive Ensemble Learning with a Fine-Tuned Framework for Cyberbullying Detection in Cross-Platform Social Media Environments

I. Anand Raj, R. Vidya
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31809-31813 | February 2026 | https://doi.org/10.48084/etasr.15164
Abstract | PDF

A Machine Learning-Based Predictive System for Road Accident Risk Management Using Cloud Architecture

Angel Portal, Marlonn Sandoval, Pedro Castaneda, Juan Mansilla-Lopez, Alberto Daniel Garcia-Nunez
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31814-31821 | February 2026 | https://doi.org/10.48084/etasr.15262
Abstract | PDF

Policy-Oriented Carbon Neutrality Pathways in Shanxi's Power System: A LEAP-Based Scenario Analysis

Zhu Guangyao, Yao Xiao, Hai Yang, Buncha Wattana
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31822-31830 | February 2026 | https://doi.org/10.48084/etasr.15902
Abstract | PDF

Comparative Efficiency Measurement of UAV Propellers Using a Microcontroller-Based Test Bench

Erwan Eko Prasetiyo, Erwhin Irmawan, Gaguk Marausna; Ikbal Rizki Putra; Hendriana Helda Pratama, Fadhli Atha Hidayat
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31831-31838 | February 2026 | https://doi.org/10.48084/etasr.15694
Abstract | PDF

An Artificial Intelligence-Driven Deep Representation Learning Model for Securing Privacy-Preserving Applications in Human–Computer Interface Systems

Hadi Oqaibi

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31839-31844 | February 2026 | https://doi.org/10.48084/etasr.15772
Abstract | PDF

An Analytical and Numerical Investigation of Rayleigh Wave Scattering by a Surface Defect in Orthotropic Media

Hoang Ngoc Quy, Truong Giang Nguyen
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31845-31851 | February 2026 | https://doi.org/10.48084/etasr.15836
Abstract | PDF

A User-Centred E-Government Service Design Framework to Enhance Public Trust in Sustainable Policies

Agustinus Suradi, Hindriyanto Dwi Purnomo, Hendry
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31852-31862 | February 2026 | https://doi.org/10.48084/etasr.14851
Abstract | PDF

A Similarity Measures-Based TOPSIS Method for Neutrosophic Hypersoft Set with Application in Crop Production

Vijay Govindarajan, Amr Yousef, Aleen Ijaz Chaudhary, Adil Ahmad, Zaffar Ahmed Shaikh
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31863-31873 | February 2026 | https://doi.org/10.48084/etasr.15496
Abstract | PDF

Zone-Aware Greenhouse Control and Multitask Crop Yield Prediction Using ConvLSTM and EMMYP-Net

K. P. Mayuri, Sheela Kathavate
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31874-31879 | February 2026 | https://doi.org/10.48084/etasr.15707
Abstract | PDF

Integrating EEG Artifact Removal with Deep Learning for Accurate Motor Imagery Classification in Acute Stroke

Yamin Thwe, Dechrit Maneetham, Padma Nyoman Crisnapati
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31880-31886 | February 2026 | https://doi.org/10.48084/etasr.15300
Abstract | PDF

An Energy-Aware Cluster-Head Selection for Improving Network Lifetime in Wireless Sensor Networks Using Machine Learning Techniques

Shobha Chandra K., B. Ramesh, J. Chandrika
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31887-31894 | February 2026 | https://doi.org/10.48084/etasr.15963
Abstract | PDF

A Dual-Stage Deep Learning Framework for Obesity Assessment with Ultrasound Image Segmentation and Severity Classification

Rohini Pawar, Rohini Jadhav, Rohit Jadhav, Gagandeep Kaur, Rutuja Rajendra Patil
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31895-31900 | February 2026 | https://doi.org/10.48084/etasr.15784
Abstract | PDF

Medical Image Fusion Using Symmetric and Asymmetric Strategies: Evaluating Classical and Deep Learning Methods

Hayath T M, Sai Madhavi D
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31901-31906 | February 2026 | https://doi.org/10.48084/etasr.15711
Abstract | PDF

Optimized Gaussian Process Regression for Multimodal Spatio-Temporal Prediction of Alzheimer's Disease Progression

Muhammad Khoiruddin Harahap, Syahril Efendi, Amalia, T. Henny Febriana Harumy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31907-31915 | February 2026 | https://doi.org/10.48084/etasr.16367
Abstract | PDF

Minimizing the Cross-Sectional Area and Maximizing Efficiency in Split-Input Two-Stage Gearboxes via NSGA-II with SAW-Guided Choice

Binh Duc Vu, Giang Ngoc Tran, Van Thanh Dinh, Hien Thanh Bui, Tam Thi Do
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31916-31922 | February 2026 | https://doi.org/10.48084/etasr.14925
Abstract | PDF

A Simulation Study of CO2 Hydrate Inhibition in CO2+CH4 Seawater Mixture

Dileep Kumar, Bhajan Lal, Ismail Mohd Saaid, Khor Siak Foo, Syahrir Ridha, Nurul Athirah Basnih
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31923-31929 | February 2026 | https://doi.org/10.48084/etasr.12311
Abstract | PDF

A Reversible Data Hiding Framework for Secure Brain MRI Protection Utilizing Deep Learning

Neethipudi Sashi Prabha, N. Rama Rao
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31930-31938 | February 2026 | https://doi.org/10.48084/etasr.14147
Abstract | PDF

Assessing the Impact of Economic Variables on the Energy Demand in Malaysia: A Regression Approach

Nor Afiza Mohd Noor, Mohamad Fani Sulaima, Mohd Khairil Rahmat, Norhafiza Mohamad, Hazlie Mokhlis
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31939-31946 | February 2026 | https://doi.org/10.48084/etasr.15272

Abstract | PDF

Enhanced Prediction of the Flexural Capacity of Prestressed Reinforced Concrete Beams Using an Improved PSO-ANN Model

Minh Thu Tran, Linh Le
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31947-31953 | February 2026 | https://doi.org/10.48084/etasr.15746
Abstract | PDF

Utilizing Adaptive Learning with GPT-4 for Introduction to Python: Effects on Accuracy and Time-to-Solution

Diego Santivanez, Kevin Oliva, Lenis Wong
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31954-31962 | February 2026 | https://doi.org/10.48084/etasr.13246
Abstract | PDF

Engineering Development of a Pulsed Electric Field System for Heavy Metal Reduction in Blood Clams (Anadara Granosa)

Qirom Qirom, Rony Darpono, Arry Darmawan, Muladi Putra Mahardika, Adji Parikesit, Fithria Novianti, Rini Handayani, Andrianopsyah Mas Jaya Putra
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31963-31969 | February 2026 | https://doi.org/10.48084/etasr.15968
Abstract | PDF

An Intelligent Cybersecurity Framework for IoT Environments Using a Multi-Stage Heuristic Algorithm Fused with a Spatiotemporal Attention Mechanism

Hassan A. Alterazi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31970-31975 | February 2026 | https://doi.org/10.48084/etasr.16005
Abstract | PDF

A Differentiable Gating Mechanism for DETR: Improving Attention Efficiency in Real-Time Road Anomaly Detection

Noor Misbah, S. Srinath, R. Rakshitha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31976-31982 | February 2026 | https://doi.org/10.48084/etasr.15977
Abstract | PDF

Designing a Smart Farming Greenhouse Electrical Power Monitoring System Based on Internet of Things Technology

Marti Widya Sari, R. Hafid Hardyanto, Prahenusa Wahyu Ciptadi, Endi Kurniawan, Banu Santoso
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31983-31990 | February 2026 | https://doi.org/10.48084/etasr.16127
Abstract | PDF

A Sentiment Analysis of the Tourist Reviews of the Attractions in Saudi Arabia Using Deep Learning Models

Raneem Alharbi, Areej Alshutayri, Shahd Alahdal
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 31991-31999 | February 2026 | https://doi.org/10.48084/etasr.12750
Abstract | PDF

Developing a Scalable, AI-Enhanced VR Platform for Aviation Training: Commercial Aircraft Case Studies

Hoang Nguyen The
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32000-32008 | February 2026 | https://doi.org/10.48084/etasr.15338
Abstract | PDF

A Deep Learning–Enhanced Blockchain Architecture for Intrusion Detection and Classification

C. Ananth, S. Sathiyarani, N. Mohananthini
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32009-32014 | February 2026 | https://doi.org/10.48084/etasr.15481
Abstract | PDF

Analysis of the Delay Risk of the Engineering, Procurement, Construction, and Commissioning (EPCC) Phases in Oil and Gas Industry Projects

Munawir, Rosmariani Arifuddin, M. Asad Abdurrahman
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32015-32023 | February 2026 | https://doi.org/10.48084/etasr.13969
Abstract | PDF

Precarious Work and its Association With Musculoskeletal Disorders: A Systematic Review

Paras Behrani, Ahmad Shahrul Nizam
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32024-32029 | February 2026 | https://doi.org/10.48084/etasr.13234
Abstract | PDF

MediAnnote: A Framework for Collaborative Annotation and Retrieval of Chest X-Rays Using the Radiology Gamuts Ontology

Mona Alshlowi, Samar Alkhuraij, Hajar Alharbi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32030-32040 | February 2026 | https://doi.org/10.48084/etasr.16118
Abstract | PDF

A Simulation-Based Study on the Influence of the Impact Velocity on the Structural Deformation, Stress, and Cabin Intrusion of Passenger Vehicles

Le Xuan Cuong
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32041-32045 | February 2026 | https://doi.org/10.48084/etasr.15829
Abstract | PDF

A Deep Learning-Based Intelligent Approach for Automated Olive Leaf Disease Detection Using the Optimized VGG16

Issam Trrad, Issa Alsmadi, Mohamed S. Sawah
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32046-32052 | February 2026 | https://doi.org/10.48084/etasr.15939
Abstract | PDF

A Comprehensive Review of Artificial Potential Field Techniques in Human–Robot Collaboration from 2019 to 2024

Chi Dung Pham, Hung Nguyen, Thanh Phuong Nguyen, Ha Quang Thinh Ngo
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32053-32073 | February 2026 | https://doi.org/10.48084/etasr.14874
Abstract | PDF

Development of Performance Parameters for the Assessment of Reinforced Concrete Bridge Girder Beams

Rudy Djamaluddin; Rusdi Usman Latief; Fakhruddin, Kohei Yamaguchi; Arman Setiawan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32074-32080 | February 2026 | https://doi.org/10.48084/etasr.15826
Abstract | PDF

A Machine Learning-Based Stock Forecasting Method for Inventory Optimization in Micro and Small Enterprises

Jimmy K. Franco, Nelson M. Guevara, Pedro Castaneda, Juan Mansilla-Lopez, Alberto Daniel Garcia-Nunez
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32081-32088 | February 2026 | https://doi.org/10.48084/etasr.15535
Abstract | PDF

A Dual-Modality Deep Learning Framework for COVID-19 Detection with Interpretability Using Chest X-Ray and CT Imaging

R. Arvind, Manoj Challa
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32089-32096 | February 2026 | https://doi.org/10.48084/etasr.15824
Abstract | PDF

A Comparative Assessment of Advanced Bias Correction Methods for GPM IMERG in Banjir Kanal Timur Watershed

Rahmah Dara Lufira, Ery Suhartanto, Ussy Andawayanti, Runi Asmaranto, Rizki Tri Utami
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32097-32103 | February 2026 | https://doi.org/10.48084/etasr.15484
Abstract | PDF

IndexCLR: Class-Aware Contrastive Learning for Similarity Indexing

Ovais Rashid Khan, Javaid Iqbal Bhat
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32104-32109 | February 2026 | https://doi.org/10.48084/etasr.15220

Abstract | PDF

A Performance Comparison of 1D, 2D, and 3D CNN Architectures for Robot Voice Command Classification

Santoso, Tri Arief Sardjono, Djoko Purwanto
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32110-32119 | February 2026 | https://doi.org/10.48084/etasr.14068
Abstract | PDF

Optimized EfficientNet for Detection of Endometrial Cancer Using Histopathological Images

B. T. Keerthishree, Pushpa Ravikumar
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32120-32126 | February 2026 | https://doi.org/10.48084/etasr.13925
Abstract | PDF

A Quantum-Secured Federated Deep Learning Framework for Multimodal Stress Prediction Using Smartwatch and Smartphone IoT Data

Vivi Monita, Naufal Hanan Lutfianto, Indrarini Dyah Irawati, Andrea Stevens Karnyoto
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32127-32136 | February 2026 | https://doi.org/10.48084/etasr.16554
Abstract | PDF

Adaptive Risk-Stratified Stacking for Ten-Year Cardiovascular Disease Prediction with SHAP Interpretability

Kanda Sorn-In, Wirapong Chansanam, Pathamakorn Netayawijit
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32137-32147 | February 2026 | https://doi.org/10.48084/etasr.16262
Abstract | PDF

Multimodal Sentiment Analysis of Twitter Data Using Early Fusion Along with a Fully Connected Neural Network and Multilayer Perceptron Framework

T. S. Kaveri, B. S. Harish, C. K. Roopa, M. S. Kendagannaswamy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32148-32158 | February 2026 | https://doi.org/10.48084/etasr.15303
Abstract | PDF

Early Detection of Glaucoma by Retinal Imaging

K. R. Suma, Anandthirtha B. Gudi, Shridhar Kabbur
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32159-32166 | February 2026 | https://doi.org/10.48084/etasr.14881
Abstract | PDF

Automated Shallot Classification on Conveyor Belts Using Watershed Transform and Otsu Thresholding

Indrabayu, Misita Anwar, Intan Sari Areni, A. Ais Prayogi, Anugrayani Bustamin, Haryanti Rivai, Muhammad Abdillah Rahmat
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 32167-32174 | February 2026 | https://doi.org/10.48084/etasr.14617
Abstract | PDF

Detecting and Optimizing Flawed Queries in Triplestore-Based Knowledge Systems Using Reinforcement Learning

Reinforcement Learning for Secure SPARQL Query Optimization

S. M. Emdad Hossain, Mourad M. H. Henchiri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32175-32185 | February 2026 | https://doi.org/10.48084/etasr.13036
Abstract | PDF

Optimized Feature Extraction via Custom Low-Cost sEMG Hardware for Real-Time Myoelectric Interfaces

Thi-Mai-Phuong Dao, Van-Kien Nguyen, Ngoc-Khoat Nguyen, Loc Le, Tien-Dung Nguyen, Tri Nguyen, Thi-Duyen Bui, Duy-Trung Nguyen, Huu-Thang Nguyen
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32186-32194 | February 2026 | https://doi.org/10.48084/etasr.16242
Abstract | PDF

NeuroFusion for Robust and Explainable Multimodal Deep Learning in Fine-Grained Staging of Alzheimer's Disease Across Imaging and Clinical Biomarkers

Garima Shukla, Vanshaj Awasthi, Prashant Dubey, Sakshi Nipane, Sampurna Roy, Rajiv Iyer, Sumendra Yogarayan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32195-32202 | February 2026 | https://doi.org/10.48084/etasr.14186
Abstract | PDF

Maintenance Strategy Selection and Its Impact on the Optimization of Life Cycle Costs in Industrial Systems

Zineb Znaidi, Moulay El Houssine Ech-Chhibat, Azeddine Khiat, Mounir El Khiate, Hassan Samri
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32203-32211 | February 2026 | https://doi.org/10.48084/etasr.15087
Abstract | PDF

A Structural Equation Modeling Approach to the Post-Slum Upgrading Policy Design: Empirical Evidence from Banjarbaru City, Indonesia

Dhiya'ul Akbar, Akbar Rahman, Iphan Fitrian Radham, Ira Mentayani
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32212-32220 | February 2026 | https://doi.org/10.48084/etasr.15943
Abstract | PDF

Pre-Assessment of Transtibial Prosthetic Pylon Using Auxetic Bowtie Model: A Simulation and Experimental Validation

Bhre Wangsa Lenggana, Muhammad Faris Fardan, Ubaidillah, Seung-Bok Choi, Didik Djoko Susilo, Sohaib Zia Khan, Asad Ali Zaidi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32221-32232 | February 2026 | https://doi.org/10.48084/etasr.14213

Abstract | PDF

Performance Evaluation of Complex Face Emotion Recognition Using Convolution Neural Networks Under Diverse Conditions

Rajashree Jain, Milind Talele, Taher Muhammad Ali
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32233-32239 | February 2026 | https://doi.org/10.48084/etasr.14183
Abstract | PDF

Physico-Mechanical Characterization of Kazakhstan Diatomite–Opacifier Geopolymers under Electrothermal and Conventional Curing

Bolat Balapanov, Sarsenbek Montayev, Orhan Canpolat, Beyza Aygun, Mucteba Uysal
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32240-32259 | February 2026 | https://doi.org/10.48084/etasr.12056
Abstract | PDF

Machine Learning Prediction of CO_2 Emissions from Light-Duty Vehicles in Canada

Barka Satya, Muhammad Daffa Miqoilla, Afrig Aminuddin, Ahmad Naufal Labiib Nabhaan, Mohammad Badrul Alam Miah, Hesmeralda Rojas Enriquez
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32260-32266 | February 2026 | https://doi.org/10.48084/etasr.15599
Abstract | PDF

A Comprehensive Experimental Study on the Way the Operating Conditions of the Acid Treatment of Zeolite Affect Its Chemical, Textural, and Crystallographic Properties

Sanarya Kamal, Farah Al-Jubory, Ammar Abbas, Vida Ravankhah
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32267-32275 | February 2026 | https://doi.org/10.48084/etasr.16443
Abstract | PDF

Integration of Fuzzy Matching and Domain Rules for Identifying Bali's Indigenous Banjar-Based Addresses in Last-Mile Delivery Without Predefined Gazetteers

Muhammad Isa Ansori, Wiwik Anggraeni, Retno Aulia Vinarti
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32276-32284 | February 2026 | https://doi.org/10.48084/etasr.16533
Abstract | PDF

Model-Driven Engineering and Machine Learning for Legacy System Modernization

Hamza Abdelmalek, Zakaria Babaalla, Charaf Ouaddi, Lamya Benaddi, Abdeslam Jakimi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32285-32291 | February 2026 | https://doi.org/10.48084/etasr.16444
Abstract | PDF

Enhancing Alzheimer's Disease Detection Using Advanced MRI Preprocessing and Deep Learning Techniques

Bandaru A. Chakravarthi, Gandla Shivakanth
Engineering, Technology & Applied Science Research

Volume: 16 | Issue: 1 | Pages: 32292-32297 | February 2026 | https://doi.org/10.48084/etasr.15572
Abstract | PDF

Optimizing Slot Detection by Using Advanced Object Detection Techniques for Intelligent Parking Solutions

Bhavana Narsingoju, Rajashree Jain
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32298-32304 | February 2026 | https://doi.org/10.48084/etasr.11317
Abstract | PDF

A Prototype Dual-Feedback CPM Device: Precision ROM and EMG Integration for Knee Rehabilitation

Ploypailin Rakthum, Dechrit Maneetham, Myo Min Aung, Tenzin Rabgyal
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32305-32311 | February 2026 | https://doi.org/10.48084/etasr.16338
Abstract | PDF

A Swimming Athlete Performance Prediction Model Utilizing Design Thinking and the Decision Tree Approach

Anugerah Widi, Eko Sediyono, Hendry Hendry
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32312-32319 | February 2026 | https://doi.org/10.48084/etasr.16283
Abstract | PDF

Improvement of Solar Panel Efficiency Using a Water Circulation System: An Experimental Study

Najim A. Mulaan, Husssien A. Ahmed, Hasan A. Alshubber
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32320-32326 | February 2026 | https://doi.org/10.48084/etasr.15688
Abstract | PDF

Sentiment Analysis of Tweets During the Riyadh Season Using Deep Learning

Sara Alsahafi, Areej Alshutayri, Shahd Alahdal
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32327-32335 | February 2026 | https://doi.org/10.48084/etasr.15862
Abstract | PDF

Domain-Adaptive Multitask BERT with Graph Context Modeling for Code-Mixed Hinglish Sentiment Classification

Rahul Mishra, A. Kaliappan, Sarala D. V., T. V. Hyma Lakshmi, Prabhat Kumar Ravi, Y. Harika Devi, Satyajee Srivastava, Deepak Suresh Asudani, Sanjana M. Nagaraj, Yogesh H. Bhosale
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32336-32341 | February 2026 | https://doi.org/10.48084/etasr.16589
Abstract | PDF

A Two-Stage Hybrid Intrusion Detection Framework Based on Hierarchical Attack Mapping and Pruned CNN-GRU Models

Aseel M. Mohammed, Haider K. Hoomod
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32342-32347 | February 2026 | https://doi.org/10.48084/etasr.16210
Abstract | PDF

Fine-Tuning YOLOv8s for Unified Human and Face Detection in Crowded Environments

Oussama Lachihab, Ahmed El Kiram, Latifa Errajy
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32348-32356 | February 2026 | https://doi.org/10.48084/etasr.15307
Abstract | PDF

Addressing the Coupled Optimization of Feature Selection and Hyperparameter Tuning Using a TPE-Driven XGBoost-RFE Framework

N. Mohamed Abdul Kader Jailani, Geeta C. Mara
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32357-32362 | February 2026 | https://doi.org/10.48084/etasr.15024
Abstract | PDF

Geospatial Object Detection in High-Resolution Satellite Images Using an Improved Mayfly Optimization Algorithm Based on Long Short-Term Memory

R. Hemavathy, M. R. Anala, Prarthana Himanshu Upadhyaya, R. Prarthana
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32363-32368 | February 2026 | https://doi.org/10.48084/etasr.11599
Abstract | PDF

Machine Identity Management in Modern Enterprise Security: Concepts, Challenges, and the Role of Privileged Access Management Systems

Erhan Yilmaz
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32369-32376 | February 2026 | https://doi.org/10.48084/etasr.16202
Abstract | PDF

A Conversational Healthcare Companion in Kannada

Jayalakshmi Raju, K. Rohitaksha, K. S. Rekha, Bhat Geetalaxmi Jairam, M. Narender, Shashank Dhananjaya, G. S. Ananth
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32377-32383 | February 2026 | https://doi.org/10.48084/etasr.15627
Abstract | PDF

Utilization of Adaptive Machine Learning for Streaming Sentiment Analysis: The Effects of Batch and Drift Types

Sudianto Sudianto, Aminatus Sa'adah, Brian Farrel Arkana
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32384-32390 | February 2026 | https://doi.org/10.48084/etasr.16379
Abstract | PDF

EEG-Based Assessment of Suicidality Risk: An Integrated Framework with Self-Adaptive Chaotic Cuckoo Search and AttentionBiSqueezeNet

B. S. Anjan Kumar, H. N. Suresh, S. Ranjitha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32391-32397 | February 2026 | https://doi.org/10.48084/etasr.14247
Abstract | PDF

OFERCE: Optimized Rule-Based Detection of Malicious URLs

Dhika Ananda Ramadhan, Vera Suryani
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32398-32405 | February 2026 | https://doi.org/10.48084/etasr.16366
Abstract | PDF

SELI: The Stacking-Blending Ensemble Learning and Interpretability Framework for Software Effort Estimation

Puguh Jayadi, Didik Dwi Prasetya, Triyanna Widiyaningtyas; Azlan Mohd Zain
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32406-32413 | February 2026 | https://doi.org/10.48084/etasr.15742
Abstract | PDF

Advanced Manufacturing Solutions for Traditional Motifs: Proof of Concept Development for Islamic-Indonesian Ceramic Puzzle Tile Wall

Tonny Yuniarto, Eliasar Margoadi Pamungkas, Oktavianus Dwi Wahyu Widyanarka, Nesrin Yesilmen, Nugroho Mamayu Hayuning Bawono, Paulus Wisnu Anggoro
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32414-32423 | February 2026 | https://doi.org/10.48084/etasr.15229
Abstract | PDF

Integration of Altimetry and Interferometry Techniques for the Identification of the Potential of New Marsh Areas in Iraq

Murtadha Aryan, Abd Wahid Bin Rasib, Muhammad Imzan Bin Hassan, Mohammad Hanif Bin Hamden
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32424-32440 | February 2026 | https://doi.org/10.48084/etasr.15691
Abstract | PDF

Assessment of Traffic-Related Air Pollution in Kirkuk City, Iraq Using Python-Based AERMOD and GIS

Mohammed Hashim Ameen, Mastura Azmi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32441-32451 | February 2026 | https://doi.org/10.48084/etasr.16563
Abstract | PDF

Optimizing Financial Ratios with AI: A Dynamic Control Framework for Credit Institutions

Hayk Babayan, Ashot Matevosyan, Vahan Babayan, Mane Matevosyan, Arman Vardanyan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32452-32458 | February 2026 | https://doi.org/10.48084/etasr.16309

Abstract | PDF

Enhancing Threat Hunting in Wazuh through a Hybrid Random Forest Model: A Comparative Study for Reducing MTTD and MTTR in Cybersecurity Operations

Yuri Ariyanto, Yan Watequlis Syaifudin, Pramana Yoga Saputra, Chandrasena Setiadi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32459-32465 | February 2026 | https://doi.org/10.48084/etasr.16043
Abstract | PDF

Enhanced Segmentation of Fundus Images for Glaucoma Detection Using a New ECDR Model

Orken Mamyrbayev, Bakzhan Sakenov, Ardan Zhanegiz, Nurzhamal Oshanova, Guldina Kamalova, Sheripidin Khamrayev, Indira Salgozha
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32466-32471 | February 2026 | https://doi.org/10.48084/etasr.16392
Abstract | PDF

Liver Disease Prediction Using a Hybrid Machine Learning Approach

Sanjit Kumar Dash, Nitish Agrawal, Rahul Agarwalla, Mohammed Altaf Ahmed, Suleman Alnatheer, Qutubuddin Mohammed
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32472-32478 | February 2026 | https://doi.org/10.48084/etasr.15959
Abstract | PDF

Risk Analysis of the Tsunami Evacuation Infrastructure Based on the ISO 31000 in the Disaster-Prone Coastal Area in Teluk Palu

Andi Asnudin, Mastura Labombang, Andi Rizal, Agus Rivani, Clara Zenicha Lioni, William Arrang Sarungallo
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32479-32484 | February 2026 | https://doi.org/10.48084/etasr.15293
Abstract | PDF

A Research on the Effect of Velocity and Road Type on the Ride Smoothness of 16-Seat Passenger Buses Using a Mechanical Suspension System

Hung-Phi Cao, Thanh-Dong Nguyen, Huu-Danh Tran
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32485-32491 | February 2026 | https://doi.org/10.48084/etasr.13796
Abstract | PDF

Finite Element Analysis Comparing the Formability of Large Hollow Protrusions in Tube Hydroforming

Vu Duc Quang
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32492-32497 | February 2026 | https://doi.org/10.48084/etasr.15637
Abstract | PDF

A Novel Hybrid Feature Optimization Framework for Road Surface Identification with Vision Transformer and EGWO-SVM

Ramya Krishna Rajavolu, Lakshmi Rajeswara Rao Langoju
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32498-32505 | February 2026 | https://doi.org/10.48084/etasr.16508
Abstract | PDF

DriveCheck: A Driving Behavior Monitor

Michael Andre Samuel Cuadros-Ccahuana, Kevin Enrique Servat-Farfan, Pedro Castaneda, Juan Mansilla-Lopez, Alberto Daniel Garcia-Nunez
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32506-32513 | February 2026 | https://doi.org/10.48084/etasr.15030
Abstract | PDF

Window-Free IMU-Based Classification of Stair-Climbing Wheelchair Activities Using Machine Learning and Adaptive Boosting

Pharan Chawaphan, Dechrit Maneetham, Padma Nyoman Crisnapati
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32514-32523 | February 2026 | https://doi.org/10.48084/etasr.15555
Abstract | PDF

A Novel Hybrid Transformer-Based Deep Learning Approach for Multi-Step Bitcoin Price Forecasting

Rza Hasanli, Mahir Dursun
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32524-32533 | February 2026 | https://doi.org/10.48084/etasr.16684
Abstract | PDF

MMDEW: An Adaptive Multi-Metric Entropy-Based Objective Function for Stable and Energy-Efficient RPL Routing in Rural Areas

Aditya Wijayanto, Imas Sukaesih Sitanggang, Sri Wahjuni, Hendra Rahmawan
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32534-32543 | February 2026 | https://doi.org/10.48084/etasr.15261
Abstract | PDF

Feature Selection of Multichannel EEG for Attention Classification

Atmoko Nugroho, Danny Manongga, Hindriyanto Dwi Purnomo, Hendry Hendry
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32544-32549 | February 2026 | https://doi.org/10.48084/etasr.13062
Abstract | PDF

Exploring the Potential of Iron Slag and Stone Ash as Aggregate Replacements for the Improvement of the Compressive Strength and Durability of Self-Compacting Concrete

Adiwijaya, Rita Irmawaty, Irka Tangke Datu, Khairil, Taufiq Rochman, Vita Fajriani Ridwan, Muhammad Suradi, Abdul Kadir Muhammad, Budhy Setiawan, Rifaldi Yatsam
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32550-32556 | February 2026 | https://doi.org/10.48084/etasr.16741
Abstract | PDF

A Vision Transformer with a Self-Attention Mechanism for High-Accuracy Blood Cell Classification

Noor Ayesha, Humaira Khalidi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32557-32563 | February 2026 | https://doi.org/10.48084/etasr.16600
Abstract | PDF

An Optimized Multiclass Machine Learning Approach for Detecting Advanced Intrusions in IoT Systems

Mostafa Ibrahim Labib, Mohamed Salah Mohamed, Amira Ibrahim El-Desokey, Fatma Harby Mohamed
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32564-32569 | February 2026 | https://doi.org/10.48084/etasr.15800
Abstract | PDF

GIS-AHP-Based Mapping of Groundwater Potential Zones and Evaluation of Water Infrastructure Locations

A Case Study in Tagum City, Philippines

Rowena De Leon Dapar, Randell U. Espina
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32570-32576 | February 2026 | https://doi.org/10.48084/etasr.15265
Abstract | PDF

Performance Evaluation of 'Battery-Like' and Hybrid Electrochromic Devices for Dynamic Solar Control in Buildings

Eleftheria Merkoulidi, George Syrrokostas
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32577-32584 | February 2026 | https://doi.org/10.48084/etasr.15581
Abstract | PDF

A Novel Privacy-Preserving Approach Using Optimized Deep Learning for Secure Data Mining

Rahul Reddy Bandhela, RamMohan Reddy Kundavaram, Abhishake Reddy Onteddu
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32585-32592 | February 2026 | https://doi.org/10.48084/etasr.15710
Abstract | PDF

Design of Hybrid Deep Learning-Based Environmental Monitoring Using Feature Fusion Techniques on Remote Sensing Satellite Imagery

Hadi Oqaibi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32593-32599 | February 2026 | https://doi.org/10.48084/etasr.15915
Abstract | PDF

An AI-Driven Hybrid Approach for Detecting Mental Health Indicators in Multilingual Indian Social Media: Data Acquisition and Analytical Frameworks

K. Alakananda, Ananth G. Prabhu, K. M. Chaitra, Mustafa Basthikodi, Melwin D. Souza

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32600-32607 | February 2026 | https://doi.org/10.48084/etasr.15214
Abstract | PDF

Machine Learning-Based Optimization Algorithms for Spam SMS Classification

Lipsa Das, Laxmi Ahuja, Adesh Pandey

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32608-32618 | February 2026 | https://doi.org/10.48084/etasr.14670
Abstract | PDF

A Deep Learning-Based Framework Using CNN+LSTM for Karate Kata Classification and Correctness Evaluation

Nur Abdulrahman, Zahir Zainuddin, Ingrid Nurtanio

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32619-32624 | February 2026 | https://doi.org/10.48084/etasr.12147
Abstract | PDF

IoT-Driven Soil Nutrient Measurement Using LoRa and Broken-Stick Regression Techniques

C. V. Pallavi, S. Usha

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32625-32633 | February 2026 | https://doi.org/10.48084/etasr.12854
Abstract | PDF

Automating Kidney Disease Diagnosis: A Segmentation-Based, Dual-Input Approach for Classifying Acute and Chronic Kidney Disease from Ultrasound Images

Nora Alkhaldi

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32634-32661 | February 2026 | https://doi.org/10.48084/etasr.16275
Abstract | PDF

A Modified Discontinuous Modulation Signal Based on 12-Sector SVPWM with Modulation Offset Injection for a Vienna Rectifier

Ong-ard Tubburee, Sitthisak Audomsi, Worawat Sa-ngiamvibool, Kanyarat Ek-iam

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32662-32668 | February 2026 | https://doi.org/10.48084/etasr.15439
Abstract | PDF

A Self-Prompted YOLOv11–SAM 2 Pipeline for Automatic Plant Disease Detection and Segmentation

Balkis Tej, Soulef Bouaafia, Mohamed Ali Hajjaji, Abdellatif Mtibaa

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32669-32674 | February 2026 | https://doi.org/10.48084/etasr.16198
Abstract | PDF

A Conceptual Framework for Integrating ESG Profiling with Circular Economy Practices to Enhance Dual Dimensions of Firm Performance

Mahwish Rani, Fong Woon Lai, Muhammad Kashif Shad

Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32675-32681 | February 2026 | https://doi.org/10.48084/etasr.13488
Abstract | PDF

The Impact of Road Alignment Combinations on the Traffic Crash Rates on the Semarang-Solo Toll Road, Indonesia

Suprapto Hadi, S. Imam Wahyudi, Kartono Wibowo
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32682-32690 | February 2026 | https://doi.org/10.48084/etasr.15366
Abstract | PDF

Stochastic Modeling and Dynamic Optimization for the Long-Term Sustainability of Energy Savings in Demand-Response Systems

Julio Villavicencio Mera, Rayner Ricaurte Parraga, Jennyffer Yepez Ramirez, Rossana Ricaurte Parraga, Michelle Zapata Cevallos, Carlos Vaca Coronel, Jesus Verdugo Arcos
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32691-32695 | February 2026 | https://doi.org/10.48084/etasr.16019
Abstract | PDF

Segmented UAV Trajectory Optimization via Fifth-Order Polynomial Approximation and Analytical Optimal Control

Zarina Kutpanova, Kenesary Suleymenov, Dinara Kozhakhmetova, Praveen Kumar, Gani Baiseitov, Dmitry Shandronov
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32696-32703 | February 2026 | https://doi.org/10.48084/etasr.15905
Abstract | PDF

Research and Analysis on the Durability of the Chassis of the Shallot Planting Machine

Hau Le Trung, Phi Cao Hung, Quang Nguyen Thanh, Dang Nguyen Thuan Hai
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32704-32711 | February 2026 | https://doi.org/10.48084/etasr.15705
Abstract | PDF

Leveraging the Variational Autoencoder with the Blockchain Smart Contracts Model for Strengthening Fraud Detection in Financial Sectors

Khalid Hamed Allehaibi
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32712-32717 | February 2026 | https://doi.org/10.48084/etasr.13371
Abstract | PDF

Optimizing Candidate-Job Fit Using a Constraint-Aware Genetic Algorithm Framework

T. N. Malini, D. B. Srinivas, K. Lakshminarayana
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32718-32722 | February 2026 | https://doi.org/10.48084/etasr.13543
Abstract | PDF

Detection of Abnormalities in Spinal Cord Injury MRI Using Image Processing and Machine Learning

Gangadhara, Subramanya Bhat
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32723-32731 | February 2026 | https://doi.org/10.48084/etasr.15222
Abstract | PDF

Formulation and Behavior of Epoxy Coating Reinforced with Graphene Oxide-Hollow Mesoporous Silicon Dioxide for Corrosion Protection of Steel Structure

Nuratirah Rusli, Mazli Mustapha, Mohd Nurhadi Sahat, Thotiren Jegathesan, Nuur Fahanis Che Lah, Shahrul Kamaruddin
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32732-32738 | February 2026 | https://doi.org/10.48084/etasr.13220
Abstract | PDF

Multi-Criteria Evaluation of Brake Disc Materials Using BWM-TOPSIS Linear Programming

Pornsiri Khumla, Narong Wichapa, Sukangkana Talangkun
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32739-32746 | February 2026 | https://doi.org/10.48084/etasr.16129
Abstract | PDF

Adaptive Multi-Scale Gaussian-Laplacian Pyramid with Gabor Filtering for Microplastics Detection

Ahmad Cahyono Adi, Wahyono
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32747-32752 | February 2026 | https://doi.org/10.48084/etasr.15206
Abstract | PDF

Hybrid Asymmetric Cryptography and Modified Cosine Wavelet Transform-Based Steganography Using Convolutional Autoencoder for Secure Data Sharing

R. Padma, Vamsidhar Yendapalli
Engineering, Technology & Applied Science Research
Volume: 16 | Issue: 1 | Pages: 32753-32760 | February 2026 | https://doi.org/10.48084/etasr.15047
Abstract | PDF

All Issues (2011-Present)

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- Editorial Board: 48 board members / 48 institutions / 30 different countries
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- 4811 published papers, 16029 authors from 101 different countries and 2476 different institutions/organizations (not counting departments)
- 41409 registered readers and 35818 registered reviewers from 121 different countries
- days to acceptance: 56

- SCImago Quartile Ranking 2024: Q2
- Scopus CiteScore 2024: 2.9
- Scopus SJR 2024: 0.332
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A Baseline Evaluation of OCR Segmentation and Classification Methods for Printed Javanese Script

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ABSTRACT

Optical Character Recognition (OCR) for Javanese script remains challenging due to its complex glyph structure and overlapping components. In this context, this study presents a pilot investigation into the segmentation and transliteration performance of printed Javanese text using a single-page dataset. The workflow begins with preprocessing, followed by segmentation and script-level classification using the k-Nearest Neighbor (k-NN) algorithm. Experiments were conducted with 91 and 281 scripts, utilizing 100 and 500 samples per script to evaluate system performance. As a result, the segmentation stage achieved an average accuracy of 63.5%, with some lines reaching above 80%. Moving to transliteration, accuracy comparisons were performed between segmentation output, model predictions, and ground truth, yielding average accuracies of 61.4%, 72.3%, and 39.2%, respectively. Further experiments using 3-NN and 11-NN configurations demonstrated that increasing training samples and script diversity improved recognition accuracy, achieving up to 68.75% on certain lines. This research provides an initial benchmark dataset and a systematic evaluation framework, establishing a baseline that bridges the gap between handwritten and printed OCR research. The findings offer empirical insights for developing robust OCR systems to support the digital preservation of Indonesia's written cultural heritage.

Keywords-Optical Character Recognition (OCR); k-Nearest Neighbor (k-NN); printed Javanese text; segmentation

I. INTRODUCTION

Regional languages constitute a vital component of Indonesia's cultural diversity. According to Grimes, as cited in [1], Indonesia is home to 672 regional languages distributed throughout the archipelago. Several of these languages are extinct, critically endangered, or at risk of extinction, highlighting the urgency of regional language preservation. Within this context, Javanese stands out as a regional language with widespread usage and a rich literary heritage.

The Javanese script, also called Hanacaraka, Carakan, or Dentawyanjana, started in the Hindu-Buddhist period of the region. It comes from the Brahmi script and has changed over time through local forms such as Pallava and Kawi. The Javanese script is an abugida, a writing system in which each sign usually shows a consonant with a basic vowel sound, which can be modified with extra marks. This script has been used to write religious texts, legal rules, epic poems, historical stories, and teaching materials. Saving and sharing scripts, including by writing them down, teaching others, and using tools like Optical Character Recognition (OCR)—which converts images of text into computer text—is important for protecting national culture. These efforts help keep Javanese identity, language, and knowledge alive.

The Javanese script exhibits a complex morphographic structure, characterized by several interacting groups of basic forms. Morphographic structure denotes the manner in which written symbols visually encode linguistic units, such as syllables or sounds. Typically, this system comprises 20 basic forms of nglegena script (basic letters) and their pasangan, which combine to form closed consonants. It also encompasses murda script (special capital-form letters employed for proper nouns or honorifics) and sandhangan (diacritics or modifiers applied to vowels and consonants). Collectively, these elements result in a syllabic writing system, wherein each script signifies a syllable. This inherent complexity poses considerable challenges for OCR development. Difficulties are particularly notable during segmentation and normalization, as morphological variation and minimal spacing between graphemes or units, such as letters or symbols, often lead to ambiguity in delineating written units [2].

Research by authors in [3] indicates that the combination of 20 nglegena base letters, their paired forms, and sandhangan produces more than 11,000 distinct syllabic units. The breadth of these combinations underscores the need for OCR systems designed for Javanese script to accommodate extensive feature spaces and considerable visual variation. Consequently, preliminary investigations, such as the present study, are necessary for evaluating segmentation and classification approaches on limited datasets before applying them to large-scale manuscript collections. Structural complexity further necessitates adaptive methodology in feature extraction and pattern classification to achieve optimal OCR accuracy for Javanese script [2, 3].

The development of OCR technology has progressed for Latin scripts; however, significant obstacles remain for traditional scripts, such as Javanese. The primary challenge involves segmenting and classifying overlapping syllabic forms, which complicates accurate separation and subsequent recognition. Therefore, preliminary studies on controlled datasets are necessary to examine segmentation and classification methods prior to expanding to broader manuscript collections.

Segmentation is the most crucial step in the OCR process for Javanese manuscripts. It determines the system's ability to accurately recognize syllable units. Segmentation involves separating lines, syllables, or scripts in text images so that each can be individually recognized. The primary challenge before classification is extracting each syllable form from the manuscript. These manuscripts are typically compact and contain many additional elements, such as pasangan and sandhangan.

In printed Javanese script, line and syllable spacing enable segmentation based on profile projection. This approach is relatively effective because the symbols' shapes and spacing are more uniform than in handwritten manuscripts [2, 4-7]. Nevertheless, the segmentation challenges posed by Javanese script differ from those encountered in Latin scripts. Due to its syllabic structure, a single unit may encompass multiple vertically overlapping components. Examples include pasangan beneath syllables or sandhangan above them. These features can obscure syllable boundaries and cause over- or under-segmentation [3, 8]. Robust segmentation, therefore, requires both spatial analysis and a comprehensive understanding of Javanese script morphology. Systems must discern characteristic patterns, including the positions of pasangan and combinations of sandhangan. Integrating projection-based segmentation techniques with morphological image analysis methods—such as connected-component analysis—remains essential for improving syllable-separation accuracy.

After segmentation, the next challenge is automatic transliteration, which translates Javanese syllables into the Latin script. Prior research notes that combinations of nglegena, pasangan, and sandhangan create over 11,000 distinct syllabic forms [3]. This large number of classes complicates classification. Visual similarities, such as script of ka, kha, and kra, further increase difficulty. Effective recognition demands good feature extraction and suitable classifier algorithms to reduce misclassification [9].

In this context, the k-Nearest Neighbor (k-NN) algorithm is a simple yet effective approach for handling automatic transliteration of Javanese script. k-NN operates based on the principle of proximity between feature vectors (numerical representations of a script's visual traits), enabling it to classify syllable forms with high similarity while controlling the error rate [10]. Authors in [2] demonstrated that k-NN can recognize Javanese script with competitive accuracy compared to other complex methods, provided the segmentation and feature extraction stages are performed well. Its non-parametric nature and lack of intensive training make k-NN a viable alternative in pilot studies of Javanese script OCR, especially when the amount of data per class is limited and deep learning models cannot be optimally implemented. According to authors in [11], the use of k-NN in research is also considered relevant for capturing subtle differences among printed images, thereby

supporting more accurate and adaptive classification under varying printing conditions.

This study presents a pilot evaluation of OCR methods for printed Javanese script, an area that remains underexplored compared to handwritten script research. Using a representative single-page dataset, it provides an initial benchmark and empirical evaluation framework for segmentation and classification. The study establishes a baseline that bridges the gap between handwritten and printed OCR and analyzes how segmentation quality influences recognition performance. These findings form a foundation for developing robust OCR systems to support the preservation of Indonesia's written cultural heritage.

II. METHODOLOGY

The overall research methodology includes an experimental approach with a workflow-based implementation, as illustrated in Figure 1. This workflow consists of three main stages: (1) database development, (2) modeling, and (3) transliteration. It is designed to demonstrate the performance of the proposed method for recognizing and transliterating printed Javanese script images.

In the database development stage, a printed Javanese script dataset is prepared by collecting and segmenting script images from single-page source documents. The modeling stage involves constructing and training a recognition model. The transliteration stage involves transliterating recognized script markers into Latin script according to standard Javanese transliteration rules.

This methodological design allows for systematic evaluation from data preparation to model inference, ensuring that each stage contributes to the overall transliteration accuracy and robustness of the system.

A. Dataset Development

The Javanese script image dataset for this research was obtained from the printed manuscript titled "Hamong Tani" [12]. This manuscript was chosen because it contains comprehensive and representative content, including various forms of Javanese script.

Training data were obtained through image segmentation of the "Hamong Tani" manuscript, resulting in image fragments of individual scripts. The classification model was initially trained with 91 script classes, comprising nglegena, sandhangan, and pasangan. The segmented image data were saved in JPG format with uniform resolution after preprocessing. The amount of data per class was unbalanced, with the largest class reaching 654 images. Manual labeling was carried out on these data, where each image was labeled according to the script class based on the Javanese script dictionary, including the following scripts: ha, na, ca, ra, ka, da, ta, sa, wa, la, pa, dha, ja, ya, nya, ma, ga, ba, tha, nga, _ha, _he', h, hing, hu, _sa, _sar, _si, cu, d_tu, dhang, g_dha, ga, ge', gi, ing, je', je'ng, kang, ku, kung, l, l_la, l_li, lang, li, m, m_bu, m_ma, me', mi, mu, mung, n, n__na, n_da, n_ga, n_ka, n_la, n_na, n_ni, n_ru, n_ta, n_te', n_tu, ne', ngi, ngri, ni, pu, pe', pi, pra, pu, re', reng, s_ka, s_la, s_ra, s_tu, s_wa, s_wi, si, t_bu, taling, tarung, te', te'ng, ti, tu, we', wi, wu, ya_ng, and padalingsa.

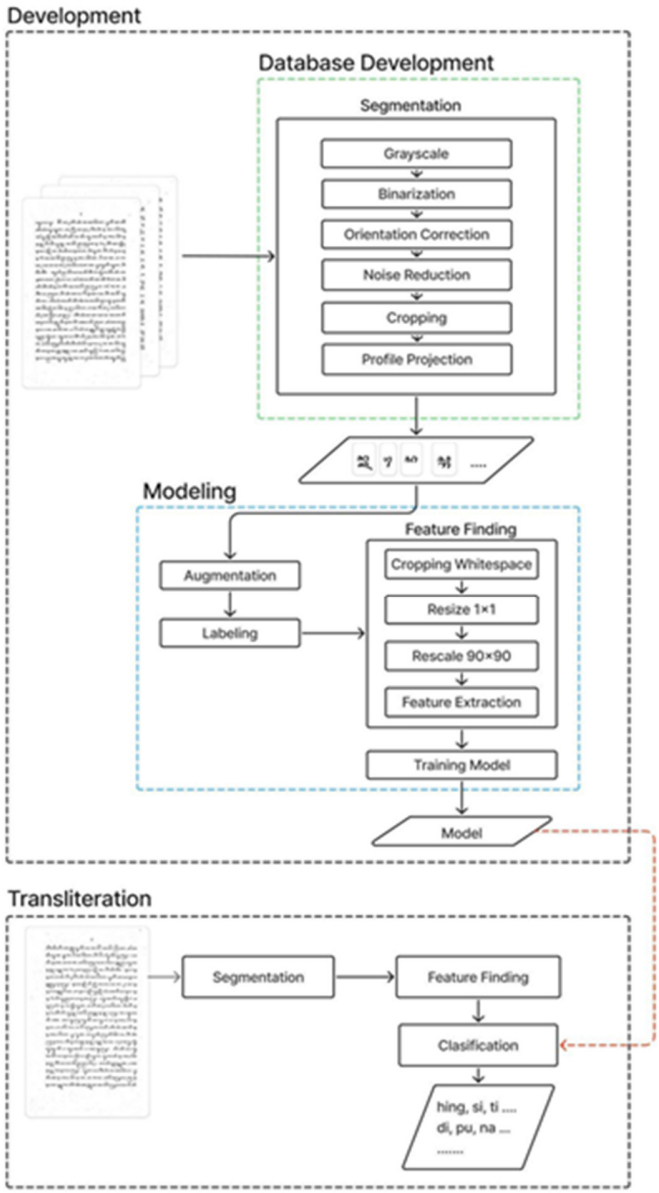

Fig. 1. Overall research methodology workflow.

Two custom-built applications were employed to support the dataset preparation process: Scinaja, which automates line and script segmentation, and Lasaja, which facilitates the manual labeling of segmented Javanese scripts. Both applications were developed by the authors specifically for this study and are available at https://drive.google.com/file/d/1xPCM_OrflnrZ_AnyUu-AChwvwf6fT4UT/view?usp=sharing.

For the next training, the number of classes increased to 306. Increasing the number of classes allows testing in real-world systems, where texts use varied sandhangan and pasangan.

The test data come from a single page of the "Hamong Tani" manuscript, processed in its entirety without manual segmentation. The purpose of the testing was to determine the OCR model's ability to recognize scripts in the context of a real manuscript, starting with automatic segmentation and classification, and finally, transliteration into Latin script.

B. Database Development

Figure 1 illustrates the implemented segmentation workflow. The development of the Javanese script database from printed manuscripts began with acquiring high-resolution manuscript images, followed by a structured segmentation pipeline designed to isolate individual scripts.

The segmentation process first converts the RGB images into grayscale. This simplifies subsequent operations and reduces computational complexity [13]. After the grayscale transformation, the images are binarized using the Sauvola thresholding method. This approach adapts the threshold based on the local mean and standard deviation. It enhances the visibility of script boundaries and minimizes background interference. In this study, the Sauvola parameters were set to a window size of 75 and k = 0.2 [14, 15]. To ensure uniform text alignment, an orientation correction was applied using the skew-detection method based on image moments [16]. This rotation ensures that all text lines are horizontally aligned before further processing. Noise and small artifacts were then removed using a median filter with a 5 × 5 kernel size [15, 17, 18]. Cropping followed noise removal to focus on relevant manuscript regions. Cropping boundaries were determined using histogram-based projection, with an additional 10% padding to ensure the text area remained complete.

Finally, line and script segmentation were conducted using the projection profile method. Horizontal projection profiles detected text lines; with valleys indicating line boundaries. Similarly, vertical projection profiles within each line were analyzed to identify script boundaries. In these profiles, valleys corresponded to spaces between adjacent scripts. This process produced segmented script fragments that were subsequently used in the feature extraction and modeling stages. The entire segmentation procedure followed and adapted methodologies previously applied to handwritten Javanese manuscripts [15].

C. Modeling Stage

The modeling stage begins with data augmentation, which increases the variety of script images and addresses dataset limitations. The augmentation process randomly rotates each Javanese script by −15° to 15° to generate new samples. Afterward, each script is assigned a label based on its class.

The next stage is feature discovery, which involves several processes. The first step is whitespace cropping to remove space around scripts. The images are then normalized to a uniform resolution of 1 × 1. Previous research showed that feature extraction worked for images measuring 90 × 90 pixels, so all scripts were resized to this size beforehand.

After image enhancement, the Javanese script images undergo feature extraction using several methods, including zoning [19, 20], projection profiles, Hu moments [21], bounding-box, and shape statistics [22, 23]. This process produces a numerical representation of each script's shape, which is then used in classification.

The zoning method divides the image into 8 × 8 pixel areas, generating 64 features. Horizontal and vertical projection profiles yield 32 features. Hu moments provide 7 features, whereas bounding-box and shape statistics give BBox ratio, pixel density, perimeter/area ratio, and solidity. There are 6 features from these methods. Altogether, the extraction process yields 109 features representing each Javanese script.

The extracted features train a k-NN model using the Euclidean (L2) metric. The resulting model is then ready for transliteration.

D. Transliteration Stage

The third stage of the research is the implementation of the model on a new manuscript. The manuscript image used as test data undergoes a series of segmentation processes, followed by feature discovery, similar to the database development stage. Next, the segmented letters are classified by the k-NN model, resulting in a transliteration in Latin text, for example, "hing, si, ti, ta, m_tu."

III. RESULTS AND DISCUSSION

A. Discussion of Modeling Development

Using 100 training datasets per class, from 91 classes, we conducted an experiment to find the best k-value for implementation in the manuscript image transliteration system, as shown in Table I. The data used for processing consisted of 9,100 vectors resulting from feature extraction from each dataset. The trends for accuracy, F1-score, and processing time were plotted based on Table I, as illustrated in Figure 2.

TABLE I. EXPERIMENTAL RESULTS OF K-NN CLASSIFIER BASED ON ACCURACY, F1-SCORE, AND TRAINING TIMES

k (number of neighbors)	Accuracy	F1-score	Training time (s)
3	0.954	0.953	0.32
5	0.929	0.926	0.33
7	0.897	0.892	0.30
9	0.875	0.867	0.31
11	0.854	0.844	0.30
21	0.723	0.711	0.32
31	0.657	0.643	0.35

A summary of the trends in Figure 2, based on Table I, shows that at k = 3, the accuracy and F1-score reached their highest value, approximately 0.9533. At k = 5, both accuracy and F1-score decreased significantly, and continued to decline at k = 7, 9, and 11.

Table I shows that the training time was relatively stable, ranging from 0.30 s to 0.33 s. These data suggest that computational complexity is not a significant issue.

The accuracy trend at low k values, specifically k = 1, 3, and 5, demonstrated relatively high accuracy but was prone to overfitting due to its sensitivity to similar test data. At intermediate k values (k = 7–15), the accuracy tended to stabilize and did not drop significantly, indicating a bias–variance balance point. At large k values (k > 20), the accuracy

begins to decline significantly because the model becomes too smooth (increasingly biased), thus ignoring information about the minority class. This pattern shows that a k value that is too small provides good accuracy but risks undergeneralization, whereas a k value that is too large decreases accuracy due to oversmoothing.

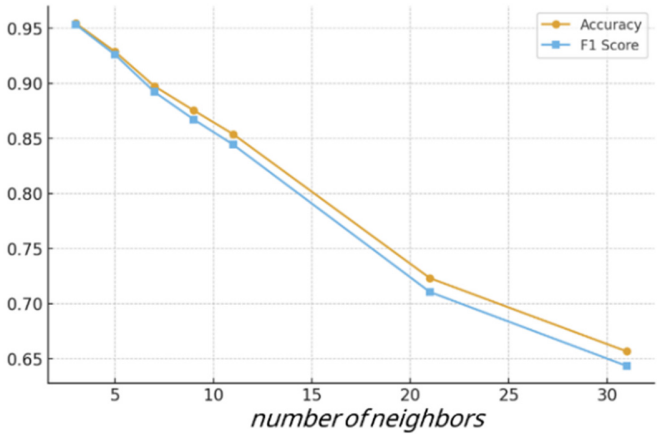

Fig. 2. Trends of accuracy and F1-score for different k values in the k-NN classifier.

The F1-score, as a balance indicator, follows the accuracy trend, meaning precision and recall are relatively balanced. The F1-score peak occurs at mid-range k values (around 7–13), indicating a compromise between misclassification and successful minority class recognition.

Judging from the variance of the results, fluctuations between folds are typically higher at small k values because the model relies heavily on nearest neighbors. At mid-range k values, variance decreases, indicating that the model is more consistent. At large k values, despite the low variance, the average performance decreases.

Based on the analysis of accuracy and F1-score values, testing will be conducted with a value of k = 3 before implementing the transliteration model in a real-world system, as it achieves the highest accuracy and F1-score. This is expected to maximize overall accuracy. The choice of the single-data test with k = 3 was not only due to its highest accuracy but also because Table I indicates no other more balanced "sweet spot." Over time, all k values are relatively similar, so this factor does not influence the choice.

However, considering the k values in the range of 7–13, this range is optimal for accuracy. Furthermore, if the focus is on stable model conditions, subsequent experiments may use a slightly larger k value within that range, namely k = 11. This also supports practical implementation, as k = 11 can be used as an initial choice and then further validated with cross-validation.

B. Discussion of the Transliteration Model Results

From the previous stage, a classification model was identified that has the potential to be applied in the automatic transliteration of Javanese script into Latin script. Using data from the "Hamong Tani" book on page 2, which consists of 20 lines, Table II shows a statistical summary of the results of the transliteration experiment using the 3-NN model.

TABLE II. PERFORMANCE EVALUATION OF SEGMENTATION AND TRANSLITERATION MODELS

Statistic	Segmentation accuracy (%)	Transliteration accuracy (%)		
		vs segmentation	vs system	vs ground truth
Minimum	40.00	27.27	33.33	16.67
Maximum	82.35	87.50	100.00	56.25
Mean	63.66	59.13	73.68	36.09
Median	64.21	62.50	71.43	35.25
Std. dev	12.31	17.12	18.83	10.83

Table II presents a summary of the performance evaluation results of the proposed model. The segmentation accuracy rate is obtained by dividing the number of correct segmentations by the total number of original data segments. The transliteration accuracy rate displays statistical test results for two training configurations: 100 datasets per class and 500 datasets per class. Accuracy is calculated based on the segmentation results, system output, and the original data.

Of the 355 Javanese scripts on the page, 225 were correctly cropped, yielding a segmentation accuracy of 63.38%. This limited accuracy represents a major bottleneck, as the system loses substantial information at the segmentation stage.

Approximately one-third of the scripts (36.6%) failed to be cropped correctly due to over-segmentation, under-segmentation, or misdetection, as illustrated in Figure 3. Over-segmentation occurs due to the presence of destructive pixels, which break a single script into multiple components. Ligature errors, where a single glyph represents a combination of letters, cause the segmentation system to treat several letters as one letter, a condition known as under-segmentation. The third factor, baseline misalignment, occurs when a subscript above or below the main letter is not detected.

Fig. 3. Representation of segmentation errors in Javanese script recognition.

In the recognition stage, translating Javanese into Latin, out of 225 correctly segmented scripts, only 150 were correctly recognized. Therefore, the recognition accuracy after correct segmentation was 66.67%. When evaluated for end-to-end accuracy, i.e., from the original image and calculated against a total of 355 ground truth scripts, the accuracy was 42.25%. This means that only about 42% of the scripts on the page were correctly recognized from input to final output. Very low end-to-end accuracy is common in OCR of complex scripts like Javanese, as the two stages of the process—segmentation and recognition—both contribute to errors.

Figure 4 shows an example of a transliteration error in which the Javanese script "ta" was mistakenly recognized as "ka." This error occurred due to the high visual similarity

between the two glyphs, especially in printed manuscripts with subtle stroke variations. Of the ten samples tested, eight (80%) were misclassified. This shows that this pair of letters is among the most frequently misrecognized in the transliteration process in this study.

Fig. 4. Example of transliteration error between similar glyphs.

The experiment continued by using 11 neighbors to evaluate the effect of a larger k on classification accuracy, while also increasing the number of classes from 91 to 281. The results are presented in Table III.

TABLE III. ACCURACY COMPARISON OF K-NN (K = 3 AND K = 11) FOR DIFFERENT NUMBERS OF SCRIPTS PER LINE AND TRAINING SAMPLE SIZES

Row	Number of scripts	Accuracy (%)		
		3-NN (91 scripts, 100 samples / script)	3-NN (91 scripts, 500 samples / script)	11-NN (281 scripts, 500 samples / script)
1	16	56.250	56.250	68.750
2	17	29.412	35.294	41.176
3	17	35.294	35.294	41.176
4	20	35.000	35.000	45.000
5	18	50.000	50.000	61.111
6	17	35.294	35.294	52.941
7	19	36.842	36.842	36.842
8	18	33.333	33.333	44.444
9	18	55.556	61.111	55.556
10	19	26.316	31.579	36.842
11	19	26.316	26.316	42.105
12	17	52.941	52.941	52.941
13	17	17.647	23.529	52.941
14	19	21.053	21.053	36.842
15	16	25.000	25.000	68.750
16	18	33.333	33.333	38.889
17	18	16.667	16.667	16.667
18	18	50.000	50.000	66.667
19	17	41.176	41.176	47.059
20	17	35.294	41.176	52.941

Table IV summarizes OCR performance results for the 3-NN and 11-NN classifiers under different training configurations, specifically highlighting accuracy outcomes. Table III contains the comprehensive training and evaluation data that serve as the basis for this summary. The experiments used 91 and 281 scripts, each with 100 or 500 samples per script. Accuracy values, averaged over 10-fold cross-validation, represent the model's performance stability.

In general, the 3-NN configuration produced the highest average accuracy compared to the other k values (k = 5, 7, 9, 11, 13, 21, 31), and was therefore selected as the primary model. Meanwhile, the 11-NN model was retained in the comparison test because it demonstrated accuracy stability across a larger range of scripts and datasets.

TABLE IV. SUMMARY OF OCR CLASSIFICATION PERFORMANCE

Statistic	Accuracy (%)		
	3-NN (91 scripts, 100 samples / script)	3-NN (91 scripts, 500 samples / script)	11-NN (281 scripts, 500 samples / script)
Minimum	16.67	16.67	16.67
Maximum	56.25	61.11	68.75
Mean	35.93	37.45	48.62
Median	35.29	35.29	47.06
Std. dev	10.69	11.63	11.67

The test results showed that increasing the number of samples per script from 100 to 500 at 91 scripts did not significantly improve the average accuracy per line of text. However, when the number of scripts was expanded to 281, the 11-NN model provided better stability on lines with varying script complexity. This indicates that adding scripts expands the distinction between classes, but also increases the classification challenge, especially for scripts with high shape similarity, such as pasangan and sandhangan.

Specifically, transliteration accuracy values varied between 16.67% and 68.75%, with a decreasing trend in rows containing more than 18 scripts. This phenomenon indicates the influence of segmentation noise and script shape variations between row positions.

The best results were achieved in the 3-NN configuration with 100 samples per script in row 1 (68.75%), whereas the lowest accuracy was found in row 17 (16.67%). These findings confirm that the amount of training data is not the sole dominant factor; rather, segmentation quality and the balance of class distribution are more important determinants of transliteration performance.

IV. CONCLUSION

Segmentation performance directly determines the accuracy of Javanese script transliteration. Errors such as over-segmentation, under-segmentation, and baseline misalignment significantly reduce accuracy, making segmentation the primary source of failure in the Optical Character Recognition (OCR) and transliteration pipeline. These findings confirm that improving segmentation, especially for overlapping glyphs and print variations, is essential. Enhancing this stage is expected to increase overall transliteration accuracy in future studies.

Although recognition accuracy in this pilot study is below 60%, the results represent an important initial evaluation. The highest training accuracy reached 95.4%, demonstrating that the k-Nearest Neighbors (k-NN) model effectively learns the features of printed Javanese scripts. The lower test accuracy is mostly due to the limited sample size and segmentation imperfections in the current dataset. Consequently, this study serves as a baseline experiment to inform future work on dataset expansion and OCR pipeline optimization.

Building on the previously highlighted need for improved segmentation and dataset expansion, future research could strengthen this study by optimizing feature selection and advancing computational methods. Prior work by authors in [24] demonstrated that dimensionality reduction enhances text

classification performance, suggesting potential benefits for visual feature optimization in OCR. New models, such as the Quantum Dilated Convolutional Neural Network (QDCNN) [25], may further improve recognition accuracy and computational efficiency by leveraging quantum methods, supporting Javanese OCR systems in handling high-resolution data while reducing training complexity. Future research will focus on applying deep learning and quantum models to traditional script recognition in resource-limited settings.

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REFERENCES

[1] H. Alwi, "Kebijakan Bahasa Daerah," in *Bahasa Daerah dan Otonomi Daerah*, H. Alwi and A. R. Zaidan, Eds. Jakarta, Indonesia: Pusat Bahasa, 2001, pp. 38–47.

[2] A. R. Widiarti, A. Harjoko, Marsono, and S. Hartati, "Preprocessing Model of Manuscripts in Javanese Characters," *Journal of Signal and Information Processing*, vol. 5, no. 4, pp. 112–122, Oct. 2014, https://doi.org/10.4236/jsip.2014.54014.

[3] A. R. Widiarti, "Model Transliterasi Otomatis Citra Naskah Aksara Jawa," Ph.D. dissertation, Computer Science Department, Universitas Gadjah Mada, Yogyakarta, Indonesia, 2015.

[4] A. W. Mahastama and L. D. Krisnawati, "Improving Projection Profile for Segmenting Characters from Javanese Manuscripts," in *Proceedings of the 1st International Conference on Intermedia Arts and Creative Technology*, Yogyakarta, Indonesia, 2019, pp. 77–82, https://doi.org/10.5220/0008526900770082.

[5] Y. Sugianela and N. Suciati, "Character Image Segmentation of Javanese Script using Connected Component Method," *Jurnal Ilmu Komputer dan Informasi*, vol. 12, no. 2, pp. 67–74, July 2019, https://doi.org/10.21609/jiki.v12i2.677.

[6] A. F. Ganai and A. Koul, "Projection profile based ligature segmentation of Nastaleeq Urdu OCR," in *2016 4th International Symposium on Computational and Business Intelligence*, Olten, Switzerland, 2016, pp. 170–175, https://doi.org/10.1109/ISCBI.2016.7743278.

[7] T. A. Tofiq and J. A. Hussein, "Kurdish Text Segmentation using Projection-Based Approaches," *UHD Journal of Science and Technology*, vol. 5, no. 1, pp. 56–65, May 2021, https://doi.org/10.21928/uhdjst.v5n1y2021.pp56-65.

[8] L. Liliana, S. M. Soephomo, G. S. Budhi, and R. Adipranata, "Segmentation of Hanacaraka Characters Using Double Projection Profile and Hough Transform," in *Big Data Technologies and Applications: 8th International Conference, BDTA 2017*, Gwangju, South Korea, 2017, pp. 29–37, https://doi.org/10.1007/978-3-319-98752-1_4.

[9] A. Susanto, I. U. W. Mulyono, C. A. Sari, E. H. Rachmawanto, and R. R. Ali, "Javanese Character Recognition Based on K-Nearest Neighbor and Linear Binary Pattern Features," *Kinetik: Game Technology, Information System, Computer Network, Computing, Electronics, and Control*, vol. 7, no. 3, pp. 309–316, Aug. 2022, https://doi.org/10.22219/kinetik.v7i3.1491.

[10] R. O. Duda, P. E. Hart, and D. G. Stork, *Pattern Classification*, 2nd ed. Hoboken, NJ, USA: John Wiley & Sons, 2000.

[11] A. Rahman and M. N. A. Khan, "A Classification Based Model to Assess Customer Behavior in Banking Sector," *Engineering, Technology & Applied Science Research*, vol. 8, no. 3, pp. 2949–2953, June 2018, https://doi.org/10.48084/etasr.1917.

[12] K. F. Holle, *Hamong Tani (in Javanese, translated from Dutch by F. L. Winter)*. Batavia, Indonesia: Landsdrukkerij, 1876.

[13] Z. N. Khudhair *et al.*, "Color to Grayscale Image Conversion Based on Singular Value Decomposition," *IEEE Access*, vol. 11, pp. 54629–54638, 2023, https://doi.org/10.1109/ACCESS.2023.3279734.

[14] J. Sauvola and M. Pietikäinen, "Adaptive document image binarization," *Pattern Recognition*, vol. 33, no. 2, pp. 225–236, Feb. 2000, https://doi.org/10.1016/S0031-3203(99)00055-2.

[15] G. K. Indraputra and A. R. Widiarti, "Implementation of 4-Directional Depth First Search and Projection Profile for Javanese Manuscript Image Segmentation," *Journal of Informatics and Telecommunication Engineering*, vol. 9, no. 1, pp. 218–228, July 2025, https://doi.org/10.31289/jite.v9i1.15433.

[16] M. Ramanan, "A Hybrid Approach for Skew Detection and Correction in the Multi-script Scanned Document," *Asian Journal of Research in Computer Science*, vol. 4, no. 2, pp. 1–8, Nov. 2019, https://doi.org/10.9734/ajrcos/2019/v4i230112.

[17] V. Chauhan and P. Malhotra, "Reduction of Noise in Restoration of Images Using Mean and Median Filtering Techniques," *International Journal for Research in Applied Science and Engineering Technology*, vol. 9, no. 9, pp. 301–313, Sept. 2021, https://doi.org/10.22214/ijraset.2021.37965.

[18] S. Anand and L. Priya, "Digital Image Fundamentals," in *A Guide for Machine Vision in Quality Control*, Boca Raton, FL, USA: Chapman and Hall/CRC, 2019.

[19] H. W. Herwanto, A. N. Handayani, K. L. Chandrika, and A. P. Wibawa, "Zoning Feature Extraction for Handwritten Javanese Character Recognition," in *2019 International Conference on Electrical, Electronics and Information Engineering*, Denpasar, Indonesia, 2019, pp. 264–268, https://doi.org/10.1109/ICEEIE47180.2019.8981462.

[20] M. T. Graciello, A. N. Handayani, and A. P. Wibawa, "Optimization of Nglegena Javanese Script Recognition With Machine Learning Based on Zoning And Normalization of Feature Extraction," *Indonesian Journal of Data and Science*, vol. 6, no. 2, pp. 281–293, July 2025, https://doi.org/10.56705/ijodas.v6i2.256.

[21] M.-K. Hu, "Visual pattern recognition by moment invariants," *IRE Transactions on Information Theory*, vol. 8, no. 2, pp. 179–187, Feb. 1962, https://doi.org/10.1109/TIT.1962.1057692.

[22] G. A. Robby, A. Tandra, I. Susanto, J. Harefa, and A. Chowanda, "Implementation of Optical Character Recognition using Tesseract with the Javanese Script Target in Android Application," *Procedia Computer Science*, vol. 157, pp. 499–505, Jan. 2019, https://doi.org/10.1016/j.procs.2019.09.006.

[23] M. Anandhalli, A. Tanuja, and P. Baligar, "Geometric invariant features for the detection and analysis of vehicle," *Multimedia Tools and Applications*, vol. 81, no. 23, pp. 33549–33567, Sept. 2022, https://doi.org/10.1007/s11042-022-12919-8.

[24] S. R. Basha, J. K. Rani, and J. J. C. P. Yadav, "A Novel Summarization-based Approach for Feature Reduction Enhancing Text Classification Accuracy," *Engineering, Technology & Applied Science Research*, vol. 9, no. 6, pp. 5001–5005, Dec. 2019, https://doi.org/10.48084/etasr.3173.

[25] R. Basha, P. Pathak, M. Sudha, K. V. Soumya, and J. Arockia Venice, "Optimization of Quantum Dilated Convolutional Neural Networks: Image Recognition With Quantum Computing," *Internet Technology Letters*, vol. 8, no. 3, May 2025, Art. no. e70027, https://doi.org/10.1002/itl2.70027.