INTISARI

Universitas Sanata Dharma merupakan salah satu universitas yang sangat terbuka terhadap keberagaman. Salah satunya adalah menerima mahasiswa disabilitas serta memberikan fasilitas sesuai kebutuhan mereka. Bermula dari pengalaman ketika mendampingi mahasiswa Tuli dalam kegiatan perkuliahan, hingga menemukan keinginan untuk mengembangkan penelitian mengenai sistem pengenalan Bahasa Isyarat.

Sistem pengenalan dibuat dengan menggunakan *software Matlab* yang terdapat pada laptop dan dihubungkan dengan *webcam* untuk mengambil citra yang hendak dikenali. Citra pose *American Sign Language* akan di *capture* terlebih dahulu dan diolah melalui tahap *preprocessing*. Tahap ini akan menghasilkan citra dalam bentuk biner yang akan mengenali citra yang berwarna kuning. Kemudian akan diolah kembali dengan menggunakan ektraksi ciri *moment invariant hu* dan menggunakan *template matching* similaritas kosinus dan klasifikasi *k-Nearest Neighbour* (k-NN).

Pengujian sistem pengenalan pose *American Sign Language* dilakukan secara *real time* maupun *non real time*. Tingkat pengenalan rata-rata pengujian *non real time* pada variasi translasi mencapai 91,88% dengan k=3. Variasi rotasi mencapai 97,5% dengan sudut 45^o. Hasil pengujian secara *real time* menggunakan data uji peneliti maupun subjek penelitian orang lain. Tingkat pengenalan rata-rata pengujian *real time* pada variasi translasi mencapai 76,88% dengan nilai k=1. Variasi rotasi mencapai 85,5% dengan sudut 0^o. Hasil pengujian subjek penelitian lainnya memiliki tingkat pengenalan rata-rata tertinggi pada variasi rotasi 0^o sebesar 66,5% dengan k=3.

Kata kunci : *American Sign Language, preprocessing, moment invariant hu*, similaritas kosinus, dan *k-Nearest Neighbour* (k-NN).

ABSTRACT

Sanata Dharma University is one of many universities that is very open to diversity. This university accepts students with disabilities and provides facilities according to their needs. Starting from the experience when accompanying deaf student in the class, the author found the desire to develop research about Sign Language recognition system.

The recognition system in this research was created using Matlab software on a laptop connected to a webcam to retrieve images to be recognized. Images of the American Sign Language pose was captured first and processed through the preprocessing stage. This stage produced binary images which recognized yellow-colored parts of the images. After that, it was reprocessed using moment invariant hu's feature extraction and cosine similarity's template matching and k-Nearest Neighbour (k-NN) classification.

The American Sign Language pose recognition system testing was done in real-time and non-real-time. The average of recognition in non real-time testing on translation variations was reached 91,88% using k=3. The rotation variations were reached 97,5% with an angle of 45º. The results in real-time testing using data from researchers and other research subjects. The average of recognition in real-time testing on translation variations was reached 76,88% using k=1. The rotation variations were reached 85,5% with an angle of 0º. The results of other research subjects had average recognition was reached 66,5% with k=3 and an angle of 0º.

Keywords: *American Sign Language, preprocessing, moment invariant hu, cosine similarity, and k-Nearest Neighbour*