

## INTISARI

Perkembangan teknologi dalam bidang hiburan berupa mainan, memberikan rasa ketertarikan dan kemudahan terhadap mainan tersebut pada saat dimainkan. Mainan mobil-mobilan telah berkembang menjadi robot mobil *remote controller*. Penggunaan *remote controller* membuat robot mobil menjadi lebih menarik dan dapat lebih mudah digerakkan. Disamping hal tersebut, saat ini telah berkembang pula teknologi *speech recognition* yang berguna untuk mengenali ucapan manusia. Teknologi *speech recognition* tersebut memberikan ide agar gerak robot mobil dapat diatur melalui perintah ucapan manusia.

Robot mobil akan bergerak berdasarkan perintah ucapan yang ditangkap. Ucapan manusia akan ditangkap menggunakan mikrofon menuju PC/laptop. Perintah yang diucapkan yaitu maju, mundur, kiri, kanan, stop. Ucapan masukan tersebut diolah melalui beberapa proses yaitu *preprocessing* data dan ekstraksi ciri DCT (*Discrete Cosine Transform*). Didalam *preprocessing* data terdapat pengaturan nilai pada batas potong, nilai alfa pada proses *windowing*, dan nilai faktor *downsampling* yang dipakai untuk pengolahan masukan ucapan. Hasil ekstraksi ciri akan dibandingkan terhadap basis data ucapan dengan melakukan perhitungan similaritas kosinus.

Pengenalan ucapan untuk pengaturan gerak robot mobil tersebut telah berjalan dengan baik. Sistem pengenalan ucapan dapat mengenali ucapan yang diperintahkan dan mengirimkan data kepada robot mobil sesuai perintah yang dikenali. Pengenalan ucapan terbaik dilakukan pada kondisi nilai faktor *downsampling* 1 dengan nilai batas potong 0,1 dan nilai alfa 0,8. Hasil persentase pengenalan ucapan saat *real time* pada kondisi tersebut mendapat nilai 99,33%.

Kata kunci : Robot mobil, pengenalan ucapan, *speech recognition*, ekstraksi ciri, DCT (*Discrete Cosine Transform*), similaritas kosinus.

## ABSTRACT

The increasing of technology in toys as source of entertainment gift an interest and convenient for the toys when it is play. The traditional toys car was developed become remote controlled robot car. Benefit of using remote controller make robot car more attractive and get easier for moving on. In the otherside, technology of speech recognition was attending to recognize a human speech. Technology of speech recognition gives some idea to control robot car movement from the command of human speech.

Robot car can move based on the captured of speech command. The speech of human will be captured using a microphone. the spoken speech that using for command are maju, mundur, kiri, kanan, stop. Input of speech signal will be processed in through several processes such as preprocessing and DCT (Discrete Cosine Transfom) feature extraction. There are several setting in preprocessing such as the limit value to cutting of input signal, the value of alpha in windowing process, and the value of downsampling factor. The result of feature extraction will be compared with the database using calculation of cosine similarity method.

Speech recognition for controlled robot car movement has been working successfully. Speech recognition system can recognize speech that was ordered and sends the data to robot car based on the recognized command. The best speech recognition is occurs in condition downsampling factor value is 1 with the value of limit to cutting signal input is 0,1 and the alpha value is 0,8. The results of the current percentage of real-time speech recognition condition is 99,33%.

Keyword : Robot car, speech recognition, feature extraction, DCT (Discrete Cosine Transform), cosine similarity.