

Rancang Bangun Sistem Penilaian Esai Otomatis (SIMPLE-O) untuk Ujian Bahasa Jepang Dengan Siamese Manhattan CNN-LSTM = Development of Automated Essay Grading System (SIMPLE-O) for Japanese Exam with Siamese Manhattan CNN-LSTM

Marwah Zulfanny Alief, author

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Abstrak

Skripsi ini membahas mengenai penerapan model Siamese Manhattan Convolutional Neural Network dan Long Short-Term Memory (CNN-LSTM) untuk Sistem Penilaian Esai Otomatis (SIMPLE-O). Model deep learning sistem dikembangkan untuk dapat memprediksi nilai ujian esai Bahasa Jepang. Dari pengujian beberapa skenario dengan variasi hyperparameter, model SIMPLE-O dengan kernel sizes 5, jumlah filter 64, pool size sebesar 4, LSTM hidden units 25, batch size 50, training diulang sebanyak 50 epoch, dan optimizer SGD dengan learning rate 0,01 menghasilkan akurasi prediksi tertinggi, yaitu 70.07%. Selain itu, ditemukan pula pemanfaatan set hyperparameter hasil pencarian menggunakan hyperparameter tuning model dengan algoritma TPE dan implementasi library Hyperopt efektif menghasilkan peningkatan akurasi training-validation sebesar 30.98% dan 18.43% dibandingkan dengan model dasar.

.....This thesis discusses the application of the Siamese Manhattan Convolutional Neural Network and Long Short-Term Memory (CNN-LSTM) model for the Automatic Essay Grading System (SIMPLE-O). The deep learning model was developed to predict Japanese essay test scores. From testing several scenarios with hyperparameter variations, the SIMPLE-O model with kernel sizes of 5, number of filters 64, pool size of 4, LSTM hidden units of 25, batch size of 50, repeated training of 50 epochs, and the SGD optimizer with a learning rate of 0.01 produces the highest prediction accuracy, which is 70.07%. In addition, it was also found that the utilization of the hyperparameter set founded with hyperparameter tuning model which used TPE algorithm and the implemented with Hyperopt library effectively resulted in an increase in training-validation accuracy of 30.98% and 18.43% compared to the accuracy of base model.