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OPTIMASI MODEL *LIGHT GRAPH CONVOLUTIONAL NETWORK* PADA REKOMENDASI DESTINASI WISATA BERDASARKAN RIWAYAT INTERAKSI PENGGUNA

SKRIPSI

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Komputer Program Studi Rekayasa Perangkat Lunak

Oleh

Frahari Perdana Putra

2102972

PROGRAM STUDI REKAYASA PERANGKAT LUNAK

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Sebuah skripsi yang diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Komputer pada Program Studi Rekayasa Perangkat Lunak

Universitas Pendidikan Indonesia

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PERNYATAAN KEASLIAN SKRIPSI DAN BEBAS PLAGIARISME

Dengan ini saya menyatakan bahwa skripsi ini dengan Judul Optimasi Model *Light Graph Convolutional Network* Pada Rekomendasi Destinasi Wisata Berdasarkan Riwayat Interaksi Pengguna merupakan hasil kerja saya sendiri. Saya menjamin bahwa seluruh isi karya ini, baik sebagian maupun keseluruhan, bukan merupakan plagiarisme dari karya orang lain, kecuali pada bagian yang telah dinyatakan dan disebutkan sumbernya dengan jelas. Jika di kemudian hari ditemukan pelanggaran terhadap etika akademik atau unsur plagiarisme, saya bersedia menerima sanksi sesuai peraturan yang berlaku di Universitas Pendidikan Indonesia.

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UCAPAN TERIMA KASIH

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OPTIMASI MODEL *LIGHT GRAPH CONVOLUTIONAL NETWORK* PADA REKOMENDASI DESTINASI WISATA BERDASARKAN RIWAYAT INTERAKSI PENGGUNA

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ABSTRAK

Kemajuan pesat dalam jaringan digital berdampak pada lonjakan data di berbagai industri hiburan, termasuk pariwisata. Model rekomendasi menjadi solusi efektif untuk mengatasi masalah ini. *Light Graph Convolutional Network* (LightGCN), sebagai pendekatan berbasis *Neural Network*, LightGCN menawarkan keunggulan dalam menghubungkan antara pengguna dan destinasi wisata berdasarkan riwayat interaksi. Penelitian ini memiliki tujuan untuk mengevaluasi model LightGCN dalam rekomendasi destinasi wisata menggunakan dataset interaksi pengguna dan destinasi, serta melakukan analisis terkait pengaruh *hyperparameter tuning*, termasuk variasi konfigurasi dari *embedding dimension*, *learning rate*, lapis propagasi dan jenis *optimizer* terhadap kinerja model dalam memberikan rekomendasi yang relevan. Evaluasi dilakukan menggunakan metrik *Normalized Discounted Cumulative Gain* (NDCG) dan *Recall*. Hasil penelitian menunjukkan bahwa konfigurasi optimal dicapai dengan menggunakan *optimizer* Nadam, *learning rate* 0.005, *embedding dimension* 128, dan 5 lapisan propagasi. Model final yang dihasilkan menunjukkan performa yang sangat tinggi, dengan skor NDCG@5 sebesar 0.6341 dan *Recall*@5 sebesar 0.8011 pada *test set*. Hasil ini membuktikan bahwa proses *hyperparameter tuning* yang sistematis secara signifikan lebih unggul dibandingkan konfigurasi *baseline* dan mampu meningkatkan akurasi serta kualitas peringkat rekomendasi secara substansial. Menjadikan nya lebih efektif terhadap karakteristik dataset. Temuan penelitian ini memberikan wawasan praktis bagi pengembangan model rekomendasi dengan menetapkan sebuah *benchmark* performa yang kuat dan mengidentifikasi kombinasi parameter yang efektif untuk arsitektur LightGCN.

Kata Kunci : *Hyperparameter Tuning*, Interaksi, *Light Graph Convolutional Networks*, *Normalized Discounted Cumulative Gain* (NDCG), Rekomendasi Destinasi Wisata.

OPTIMIZATION OF LIGHT GRAPH CONVOLUTIONAL NETWORK MODEL FOR TOURIST DESTINATION RECOMMENDATION BASED ON USER INTERACTION HISTORY

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ABSTRACT

Rapid advances in digital networks have led to an explosion of data across entertainment industries, including tourism. Recommendation models offer an effective solution to this challenge. Light Graph Convolutional Network (LightGCN), as a neural-network-based approach, excel at linking users and tourist destinations based on their interaction histories. This study aims to evaluate the LightGCN model for recommending tourist destinations using a user-destination interaction dataset, and to analyze the impact of hyperparameter tuning specifically variations in embedding dimension, learning rate, number of propagation layers, and choice of optimizer on the model's ability to deliver relevant recommendations. Evaluation is conducted using the Normalized Discounted Cumulative Gain (NDCG) and Recall metrics. Results show that the optimal configuration employs the Nadam optimizer, a learning rate of 0.005, an embedding dimension of 128, and five propagation layers. The final model achieves outstanding performance, with an NDCG@5 score of 0.6341 and a Recall@5 score of 0.8011 on the test set. These findings demonstrate that a systematic hyperparameter tuning process significantly outperforms the baseline configuration and substantially enhances both accuracy and ranking quality, making it highly effective for the characteristics of the dataset. The insights from this research establish a strong performance benchmark and identify an effective parameter combination for the LightGCN architecture.

Keywords: Hyperparameter Tuning, Interaction, Light Graph Convolutional Networks, Normalized Discounted Cumulative Gain (NDCG), Tourist Destination Recommendation.

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