

ABSTRAK

Kemunculan model kecerdasan buatan berbasis arsitektur Transformer, seperti Text-to-Text Transfer Transformer (T5), menjadi salah satu kemajuan penting dalam bidang *Natural Language Processing* (NLP). Namun, pemanfaatan model tersebut untuk menghasilkan cerita berbahasa Indonesia masih relatif terbatas, sementara proses menulis cerita sering menghadapi kendala seperti *writer's block*. Oleh karena itu, diperlukan sistem yang mampu membantu menghasilkan cerita secara otomatis berdasarkan kata kunci yang diberikan pengguna. Penelitian ini bertujuan mengembangkan sistem pembuat cerita otomatis berbasis model T5 yang mampu menghasilkan cerita berbahasa Indonesia secara terstruktur. Dataset yang digunakan terdiri atas 1.000 cerita naratif berbahasa Indonesia yang disusun menjadi 10.000 pasangan data *input-output* dengan membagi setiap cerita menjadi sepuluh bagian agar model mempelajari struktur cerita secara bertahap dan mempertahankan konteks antarbagian. Model kemudian di-*fine-tuning* menggunakan dataset tersebut, sedangkan sistem diimplementasikan menggunakan Svelte sebagai *frontend* dan FastAPI sebagai *backend*. Evaluasi dilakukan menggunakan metrik *Perplexity* untuk mengukur performa model serta penilaian oleh 10 responden terhadap aspek koherensi alur, relevansi kata kunci, struktur bahasa, kreativitas cerita, dan tampilan website. Hasil *fine-tuning* menunjukkan nilai *validation loss* sebesar 1,868330 dengan nilai *Perplexity* sebesar 6,48. Sementara itu, hasil evaluasi pengguna memperoleh nilai rata-rata keseluruhan sebesar 8,25 dari skala 10, dengan nilai relevansi kata kunci 8,1, kreativitas cerita 8,4, koherensi alur 7,8, struktur bahasa 8,4, dan tampilan website 8,55. Berdasarkan hasil tersebut, sistem mampu menghasilkan cerita yang relevan dengan kata kunci yang diberikan serta memberikan pengalaman penggunaan yang baik melalui antarmuka web.

Kata Kunci: *Artificial Intelligence*, Transformer, T5, *Fine-tuning*, *Perplexity*

ABSTRACT

The emergence of Transformer-based artificial intelligence models, such as the Text-to-Text Transfer Transformer (T5), has become one of the significant advancements in the field of Natural Language Processing (NLP). However, the application of these models for generating Indonesian-language stories remains relatively limited, while the process of writing stories often encounters challenges such as writer's block. Therefore, there is a need for a system capable of automatically generating stories based on user-provided keywords. This study aims to develop an automatic story generation system based on the T5 model to produce structured stories in the Indonesian language. The dataset used consists of 1,000 Indonesian narrative stories, which were transformed into 10,000 input-output pairs by dividing each story into ten segments. This approach enables the model to learn the story structure progressively while preserving contextual continuity between segments. The T5 model was fine-tuned using the prepared dataset, and the system was implemented with Svelte as the frontend framework and FastAPI as the backend framework. The model performance was evaluated using the Perplexity metric, while system usability and output quality were assessed by 10 respondents based on story coherence, keyword relevance, language structure, story creativity, and website appearance. The fine-tuning results achieved a validation loss of 1.868330 and a Perplexity score of 6,48. Furthermore, the user evaluation obtained an overall average score of 8.25 out of 10, with scores of 8.10 for keyword relevance, 8.50 for story creativity, 7.80 for story coherence, 8.50 for language structure, and 8.55 for website appearance. These results indicate that the proposed system is capable of generating stories that are relevant to the input keywords while providing a satisfactory user experience through its web-based interface.

Keywords: Artificial Intelligence, Transformer, T5, Fine-tuning, Perplexity.