Application of Artificial Intelligence in Data Extraction from Documents in the Electronic-Based Government System Using the Forward chaining Method

Ery Setiyawan Jullev Atmadji, S.Kom, M.Cs sebagai dosen pembimbing

Ricky Dwi Setyawan

Study Program of Informatics Engineering Majoring in Information Technology

ABSTRACT

This research aims to apply Artificial Intelligence (AI) for data extraction from documents in the Electronic-Based Government System (SPBE) using Forward chaining and Transformers methods. The developed system is designed to reduce human errors in document management and speed up information retrieval processes. The Forward chaining method is applied in a rule-based chatbot that provides quick responses based on user-selected options. Meanwhile, the Transformers method uses the IndoBERTQA model to understand questions more contextually through an attention mechanism. Additionally, the data extraction from PDF documents is carried out using the PyPDF2 library, enabling text extraction that can be directly displayed on the web interface, facilitating easier access to information for users. The results of the study show that while both methods have their strengths and limitations Forward chaining is fast but lacks flexibility, while Transformers is more flexible but requires more training data and processing time the PDF extraction system performs reasonably well, although challenges remain in handling table and image formats. This research provides a significant contribution to optimizing AI technology implementation in managing SPBE documents.

Keywords: Artificial Intelligence, Electronic-Based Government System (SPBE), Data Extraction, Forward chaining, Transformers, PyPDF2, Python