INTISARI

UJI PERFORMA SISTEM *MONITORING* PENGEBORAN BERBASIS *OPTICAL CHARACTER RECOGNITION* PADA PT PARAMA DATA UNIT

Muhamad Alan Dharma Saputro Setiawan
21/481348/SV/19761

Perkembangan industri pengeboran minyak, gas, dan panas bumi menuntut peningkatan efisiensi dan digitalisasi dalam pengelolaan data operasional. PT Parama Data Unit masih mengandalkan pencatatan manual harian pengeboran dalam format PDF, yang menghambat proses analisis dan pengambilan keputusan. Untuk mengatasi tantangan tersebut, proyek ini mengembangkan sistem *monitoring* pengeboran berbasis *Optical Character Recognition* (OCR) menggunakan *Camelot* (metode *Lattice*) untuk mengekstraksi data dari laporan PDF ke dalam format digital terstruktur. Data hasil ekstraksi diproses melalui tahap *data preprocessing*, kemudian dikirimkan ke basis data *PostgreSQL* melalui *RESTful API* berbasis *Flask*. Selanjutnya, data divisualisasikan melalui *dashboard* interaktif menggunakan *Streamlit*, dilengkapi dengan filter dan grafik *time-series*. Sistem diuji dari sisi fungsi OCR, integrasi API, efisiensi *database*, dan visualisasi. Selain itu, dilakukan analisis *Quality of Service* (QoS) dengan parameter *throughput*, *latency*, dan *packet loss* menggunakan *Wireshark* untuk memastikan performa sistem pada berbagai skenario waktu dan lokasi. Hasil pengujian menunjukkan sistem mampu mengekstrak data dengan akurasi rata-rata 78,13%, waktu respon API GET di bawah 60 ms, serta eksekusi *query* SQL <1 ms. Nilai QoS berada dalam kategori “Sangat Bagus” berdasarkan standar TIPHON, dengan *throughput* rata-rata >400 kbps, *latency* <25 ms, dan *packet loss* <1%. Proyek ini berhasil membuktikan bahwa sistem *monitoring* pengeboran berbasis OCR yang dikembangkan efektif, efisien, dan layak diimplementasikan dalam mendukung digitalisasi data operasional secara terintegrasi.

Kata kunci: *Optical Character Recognition, Camelot, PostgreSQL, Flask API, Streamlit, Quality of Service, Wireshark, Drilling Monitoring,* Digitalisasi PDF

ABSTRACT

PERFORMANCE TEST OF OPTICAL CHARACTER RECOGNITION-BASED DRILLING MONITORING SYSTEM AT PT PARAMA DATA UNIT

Muhamad Alan Dharma Saputro Setiawan
21/481348/SV/19761

The development of oil, gas, and geothermal drilling industries demands increased efficiency and digitalization in operational data management. PT Parama Data Unit still relies on manual daily drilling logs in PDF format, which hinders data analysis and decision-making processes. To address this challenge, this project developed a drilling monitoring system based on Optical Character Recognition (OCR) using Camelot (Lattice method) to extract data from PDF reports into a structured digital format. The extracted data undergoes a preprocessing stage and is then sent to a PostgreSQL database via a Flask-based RESTful API. Subsequently, the data is visualized through an interactive dashboard built with Streamlit, equipped with filters and time-series charts. The system was tested across OCR functionality, API integration, database efficiency, and data visualization aspects. In addition, a Quality of Service (QoS) analysis was conducted using throughput, latency, and packet loss parameters measured with Wireshark to ensure system performance under various time and location scenarios. The results show that the system can extract data with an average accuracy of 78.13%, achieve API GET response times below 60 ms, and execute SQL queries in under 1 ms. QoS values fall within the "Excellent" category based on TIPHON standards, with an average throughput exceeding 400 kbps, latency under 25 ms, and packet loss below 1%. This project demonstrates that the OCR-based drilling monitoring system is effective, efficient, and feasible for implementation to support integrated operational data digitalization.

Keywords: Optical Character Recognition, Camelot, PostgreSQL, Flask API, Streamlit, Quality of Service, Wireshark, Drilling Monitoring, PDF Digitalization.