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**Perancangan Sistem Rekomendasi Karier Berbasis Artificial Intelligence dengan Arsitektur Autentikasi
Berlapis dan Workflow Automation Platform**
Nabilla Cantika Violina, Alif Subardono, S.T., M.Eng.
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INTISARI

PERANCANGAN SISTEM REKOMENDASI KARIER BERBASIS *ARTIFICIAL INTELLIGENCE* DENGAN ARSITEKTUR AUTENTIKASI BERLAPIS DAN *WORKFLOW AUTOMATION PLATFORM*

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Tingginya tingkat pengangguran di Indonesia menunjukkan perlunya pendekatan yang lebih efisien dan personal dalam bimbingan karier. Penelitian ini bertujuan merancang sistem rekomendasi karier berbasis *Artificial Intelligence* (AI) yang memanfaatkan model RIASEC *(Realistic, Investigative, Artistic, Social, Enterprising, Conventional)* melalui antarmuka *chatbot* dan arsitektur *Secure API Gateway* berlapis untuk menjamin keamanan sistem berbasis API. Sistem dikembangkan dengan mengintegrasikan beberapa komponen utama, yaitu *frontend* berbasis React dan Vite, Laravel sebagai API *Gateway* sekaligus lapisan keamanan, *workflow automation engine* n8n sebagai mesin pemrosesan analisis RIASEC menggunakan *AI Agent* berbasis LLM OpenAI, serta PostgreSQL, Redis, dan HashiCorp Vault sebagai komponen pendukung penyimpanan dan manajemen kredensial. Mekanisme keamanan yang diimplementasikan meliputi *Client Key Authentication, Rate Limiting, Brute-force Protection, Two-Factor Authentication* (2FA) berbasis OTP email, *Role-Based Access Control* (RBAC), dan *Audit Logging*. Hasil pengujian menunjukkan seluruh mekanisme keamanan berfungsi sesuai spesifikasi. Dari 1.278 data permintaan, rata-rata waktu *respons chatbot* pada fase pertanyaan adalah 4,468 detik dan pada fase rekomendasi adalah 22,190 detik. Pengujian akurasi AI menunjukkan tingkat *confidence score* yang baik dalam menghasilkan rekomendasi karier yang relevan berdasarkan profil RIASEC pengguna. Pengujian kepuasan pengguna terhadap 81 responden menghasilkan skor 87,99% yang termasuk kategori “Sangat Baik”.

Kata Kunci: *Artificial Intelligence,* Model RIASEC*, Secure API Gateway,* Sistem Rekomendasi Karier*, Workflow Automation* n8n

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ABSTRACT

DESIGN OF AN ARTIFICIAL INTELLIGENCE-BASED CAREER RECOMMENDATION SYSTEM WITH LAYERED AUTHENTICATION ARCHITECTURE AND WORKFLOW AUTOMATION PLATFORM

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The high unemployment rate in Indonesia highlights the need for a more efficient and personalized approach to career guidance. This study aims to design an Artificial Intelligence (AI)-based career recommendation system that utilizes the RIASEC model (Realistic, Investigative, Artistic, Social, Enterprising, Conventional) through a chatbot interface and a multi-layered Secure API Gateway architecture to ensure the security of API-based systems. The system was developed by integrating several main components, namely a React and Vite-based frontend, Laravel as the API Gateway as well as the security layer, the n8n workflow automation engine as the RIASEC analysis processing engine using an OpenAI LLM-based AI Agent, as well as PostgreSQL, Redis, and HashiCorp Vault as supporting components for storage and credential management. The security mechanisms implemented include Client Key Authentication, Rate Limiting, Brute-force Protection, email OTP-based Two-Factor Authentication (2FA), Role-Based Access Control (RBAC), and Audit Logging. Test results indicate that all security mechanisms function according to specifications. Out of 1,278 request data points, the average chatbot response time during the questioning phase was 4.468 seconds and during the recommendation phase was 22.190 seconds. AI accuracy testing demonstrated a good confidence score in generating relevant career recommendations based on users' RIASEC profiles. User satisfaction testing conducted on 81 respondents yielded a score of 87.99%, which falls into the "Very Good" category.

Keywords: Artificial Intelligence, RIASEC Model, Secure API Gateway, Career Recommendation System, n8n Workflow Automation