

ABSTRAK

Sekolah Menengah Kejuruan memiliki peran penting dalam menyiapkan lulusan yang siap kerja, salah satunya melalui program Praktek Kerja Lapangan. Namun, penempatan siswa ke industri masih dilakukan secara manual tanpa mempertimbangkan kesesuaian antara kompetensi siswa dan kebutuhan industri. Penelitian ini bertujuan mengembangkan sistem rekomendasi penempatan PKL dengan menggabungkan metode *Singular Value Decomposition* dan *Constraint Based*. SVD digunakan untuk memprediksi kecocokan antara siswa dan industri, sementara *Constraint Based* memastikan rekomendasi sesuai kriteria tetap seperti jurusan, keahlian, dan kapasitas siswa yang dapat diterima industri. Penelitian dilakukan di SMK Negeri 2 Banda Aceh dengan 344 siswa dari 11 kompetensi keahlian yang mencakup bidang Otomotif, Mesin, Ketenagalistrikan, Elektronika, Konstruksi dan Properti, serta Komputer. Sistem diuji pada lebih dari 120 mitra industri dari berbagai sektor seperti perakitan dan perawatan kendaraan, sistem pendingin dan tata udara, manufaktur teknik, konstruksi, instalasi listrik, hingga layanan berbasis teknologi. Sistem dibangun menggunakan bahasa *Python* dan *framework Flask*. Pada hasil pengujian, seorang siswa Teknik Kendaraan Ringan direkomendasikan ke industri otomotif dengan skor kecocokan tertinggi 0,78 karena seluruh kriteria terpenuhi. Sebaliknya, siswa Teknik Pendingin dan Tata Udara dengan skor tertinggi 0,31 terhadap industri otomotif dialihkan ke sektor perbaikan AC dengan skor 0,24 karena kriteria industri tidak sesuai dengan Batasan yang telah ditentukan. Hasil ini menunjukkan sistem mampu memberikan rekomendasi yang relevan dan akurat.

Kata kunci: Praktek Kerja Lapangan, Sistem Rekomendasi, *Singular Value Decomposition*, *Constraint Based*, *Python*.

ABSTRACT

Vocational High Schools play an important role in preparing graduates to be job-ready, one of which is through the Internship Program (Praktek Kerja Lapangan/PKL). However, student placements into industries are still conducted manually, without considering the alignment between students' competencies and industry requirements. This study aims to develop a PKL placement recommendation system by combining the Singular Value Decomposition (SVD) method and Constraint-Based filtering. SVD is used to predict the compatibility between students and industries, while the Constraint-Based method ensures that recommendations meet fixed criteria such as student major, skills, and the number of students that industries can accept. The study was conducted at SMK Negeri 2 Banda Aceh, involving 344 students from 11 areas of expertise, covering fields such as Automotive, Mechanical Engineering, Electrical Engineering, Electronics, Construction and Property, and Computer Science. The system was tested with more than 120 partner industries from various sectors, including vehicle assembly and maintenance, air conditioning and cooling systems, technical manufacturing, construction, electrical installation, and technology-based services. The system was developed using Python and the Flask web framework. In the Testing phase, a student from the Automotive Engineering department was recommended to an automotive company with the highest compatibility score of 0.78, as all criteria were met. Meanwhile, a student from the Air Conditioning and Refrigeration department, who had a higher score of 0.31 for the automotive industry, was redirected to an AC repair sector with a score of 0.24 due to unmet industrial constraints. These results indicate that the system is capable of generating recommendations that are both relevant and accurate.

Keywords: Internship Program, Recommendation System, Singular Value Decomposition, Constraint-Based, Python.