

INTISARI

Analisis dan Implementasi Sistem *End-To-End Good First Issue Recommender* Berbasis Model PFIRec pada Lingkungan Github *Open-Source Repository*

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Ekosistem perangkat lunak sumber terbuka (*Open Source Software*) menghadapi tantangan krusial dalam regenerasi kontributor akibat tingginya tingkat pergantian (*turnover*) dan inefisiensi mekanisme *onboarding* manual yang seringkali tidak mempertimbangkan kecocokan kompetensi teknis pelamar. Penelitian ini bertujuan mengembangkan sistem rekomendasi *issue end-to-end* yang mengimplementasikan model *Personalized First Issue Recommender* (PFIRec) untuk mempersonalisasi penemuan *issue* bagi kontributor pemula. Solusi ini menjembatani model *machine learning* teoretis ke dalam arsitektur perangkat lunak skala industri, dengan batasan pada pengembangan infrastruktur tanpa modifikasi internal model inti. Metodologi pengembangan mengintegrasikan pendekatan *User-Centered Design* (UCD) dan rekayasa arsitektur *microservices* yang kompleks berbasis *Google Cloud Platform* untuk menghadirkan antarmuka intuitif yang didukung oleh mekanisme pemrosesan asinkron dan strategi *caching* hibrida berkinerja tinggi. Validasi sistem dilakukan melalui pengujian fungsional, pengujian beban (*load testing*), dan *Task-Based Usability Testing* (UAT) yang melibatkan partisipan dengan beragam latar belakang teknis. Hasil pengujian menunjukkan bahwa arsitektur sistem mampu menangani beban konkurensi dengan tingkat ketersediaan layanan mencapai 99,50%. Evaluasi penerimaan pengguna menghasilkan skor *usability* agregat sebesar 4,71 dari skala 5,00. Temuan ini mengindikasikan bahwa sistem rekomendasi yang dikembangkan efektif dalam menurunkan hambatan masuk bagi kontributor baru, meskipun efektivitas rekomendasi masih dipengaruhi oleh ketersediaan riwayat data kontribusi pengguna GitHub.

Kata Kunci:

End-to-End System, Microservices, Queue, Service Worker, Open-Source Software, Git, GitHub, Good First Issue, Recommender System, PFIRec

ABSTRACT

Analysis and Implementation Of An End-To-End Good First Issue Recommender System Based On The PFIRec Model In GitHub Open-Source Repository Environment

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The Open Source Software (OSS) ecosystem faces critical challenges in contributor regeneration due to high turnover rates and inefficient manual onboarding mechanisms that often overlook applicants' technical competency alignment. This study aims to develop an end-to-end issue recommendation system implementing the Personalized First Issue Recommender (PFIRec) model to personalize issue discovery for newcomers. This solution bridges theoretical machine learning models with industrial-scale software architecture, focusing on infrastructure development without modifying the internal core model. The development methodology integrates User-Centered Design (UCD) with complex microservices architecture engineering on Google Cloud Platform to deliver an intuitive interface supported by asynchronous processing mechanisms and high-performance hybrid caching strategies. System validation was conducted through functional testing, load testing, and Task-Based Usability Testing (UAT) involving participants with diverse technical backgrounds. The results demonstrate that the system architecture is capable of handling concurrency loads with a service availability level reaching 99.50%. User acceptance evaluation yielded an aggregate usability score of 4.71 out of 5.00. These findings indicate that the developed recommendation system is effective in lowering entry barriers for new contributors, although recommendation effectiveness remains influenced by the availability of users' GitHub contribution history data.

Keywords:

End-to-End System, Microservices, Queue, Service Worker, Open-Source Software, Git, GitHub, Good First Issue, Recommender System, PFIRec