

ABSTRACT

Choosing the right academic path can be overwhelming for students, impacting their future careers and academic success. Existing recommender systems in higher education mainly focus on suggesting courses or colleges, neglecting the crucial gap of comprehensive career path recommendations based on real-world outcomes. This research proposes a Conversational Recommender System (CRS) powered by a knowledge graph (KG) built from student education data and tracer study data. This CRS recommends student profiles from alumni data with similar academic tracks and career outcomes, providing students with academic references for achieving their desired career goals. The benefit extends beyond students, benefiting lecturers by aligning them with students matching their expertise, leading to a more effective learning environment. This proposed method was implemented and tested by academic members at Telkom University, including lecturers, students, and alumni. Our experiment evaluated the performance of our KG-based CRS implementation on the proposed novel educational data approach. The evaluation focused on both the quality of the KG itself and the performance of the CRS. The constructed KG achieved an average coverage of 67.72%, indicating comprehensive capture of relevant entities, with high correctness of 87.74% verified against ground truth. The proposed CRS delivered a system accuracy of 87.04%, demonstrating user acceptance further supported by an average System Usability Score (SUS) of 72.9, falling within the "Good" category.

Keywords: Conversational recommender system, knowledge graph, tracer study data, career path recommendation, higher education