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AI-Enhanced Portfolios for University Admission Applications: A Personalized and Adaptive Approach

Ying-Shan Liu[1], Pei-Hsin Hsiao[2], Yi-Chi Wang[3], Han-Chih Cheng[4], Yi-Ling Liu[5], Yap Han Yang[6], Kung Chen[7]

National Chengchi University, Taiwan

ABSTRACT

This study introduces an AI-driven system designed to help Taiwanese high school students systematically prepare and optimize their learning portfolios for university admission applications. The core problem is the lack of structured support for students to identify areas for improvement and effectively present and reflect on their learning experiences and achievements during portfolio preparation, which often leads to resource disparities among students from different backgrounds. The objective is to provide an efficient, interactive, and adaptive platform to enhance the quality, structure, and coherence of student portfolios while supporting self-reflection. The system employs five stages: preliminary reading and diagnosis, prompt-based guidance and clarification, logicality and fluency checking, in-depth paragraph-by-paragraph revision, and final integration and refinement. Leveraging advanced large language models and prompt engineering, the platform delivers personalized questions, targeted guidance, and constructive feedback tailored to individual needs at each stage. The system was experimentally piloted with approximately 30 students drawn from two different high schools to evaluate its initial effectiveness and usability. Preliminary findings indicate improvements in portfolio clarity, organization, and persuasiveness, along with increased student engagement, self-reflection, and awareness of learning progress. Overall, this system demonstrates the practical potential of AI in supporting secondary school portfolio preparation by helping to reduce educational resource disparities and empowering more students to effectively showcase their strengths and learning progress.

Keywords: adaptive learning; educational equity; learning reflection; natural language processing; prompt engineering