香港城市大學
City University of Hong Kong

Developing an AI-driven real time VM platform for interactive job planning and adaptive execution

Project Number: 6000907

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Abstract:

Value Management (VM) is a systematic logical team decision-making process for problem-solving (Leung 2001). Hong Kong government encourages a wider adoption of VM techniques for construction projects (WTBC16/1998, Tang2001, WTBC35/2002, Leung et al. 2002a) in order to achieving an excellence in the quality of construction products, while most of the practitioners in the HK construction industry misunderstood and had false perceptions of VM (Fong and Shen 2000).

To enhance the innovative management techniques for our students who will become professionals in the industry, a value management (VM) course (CA4415) has been added at the CityU since 2002 and is planning to be a compulsory course in the BSc (Hons) in Surveying program in 2025. This course is transferring the teacher-centered learning to student-centered learning approach. The professor is a facilitator (instead of a traditional teacher), who facilitates students solving the practical problems every week. Students in this course are required to play different roles in a team (e.g., project manager, architect, structural engineer, architectural engineer, surveyor, facilities manager, etc.) for solving a practical longitudinal construction project in the assignment throughout the semester period (i.e., problem-solving with team-based learning (TBL) approach). However, it is not easy for students with limited professional construction knowledge making the best strategic decisions for the complicated construction projects. Therefore, searching relevant sufficient information plays essential for students in the university (as well as the construction professionals in the industry).

Based on the previous TDG projects (nos. 6000168 and 6000605), the proposed project aims to develop an AI-driven real time VM platform for interactive integrated job planning and adaptive execution, including information, analysis, creativity, evaluation, and development phases, in order to allow students practicing the holistic VM acquainted with the rules at a place suited to their level of proficiency through self-directed learning. By adopting the artificial intelligence (AI) tools in a digital platform in the whole VM process, the gap in traditional real VM workshops that is lack of prosperous information flow can be filled from big data and crucial skills in applying AI techniques. The platform seeks to enrich the proactive students' teamwork out of the normal teacher-student contact hours with free of time limitations and strengthen their competency of using digital tools. The focus of the platform is toward the development of critical self-learning and problem-solving skills with powerful support of AI for solving specific project problems in the industry. It is expected to develop a bridge linking the leading VM experts /entrepreneurs at the end of course for obtaining the professional feedback on students' project outcomes produced based on this AI-driven platform. The AI-driven real time VM platform will be disseminated and applied in the construction industry for VM purpose in

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future practice.