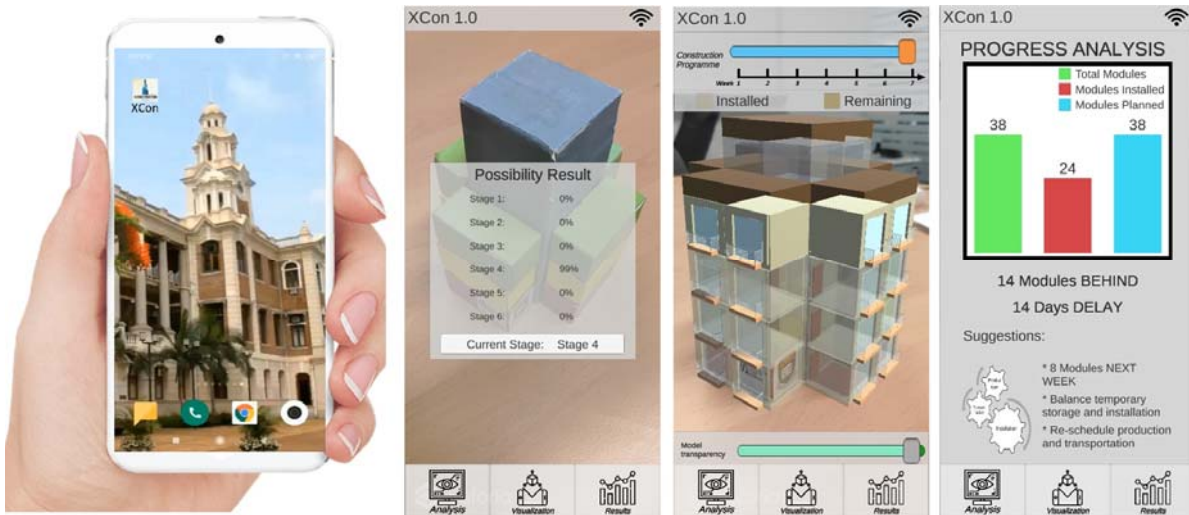
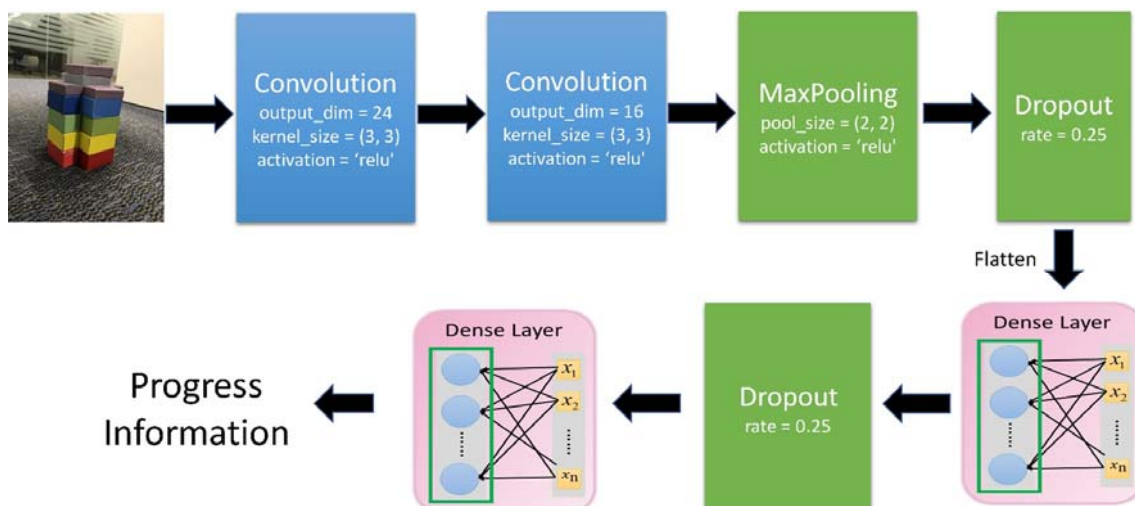


Augmented Reality and Computer Vision Integrated Construction Progress Monitoring and Control: A Case of Modular Integrated Construction

The University of Hong Kong



Construction progress monitoring and control is one of the most significant tasks of construction management. However, current practices and tools mainly rely on manual checking and adjustment, which is labour-intensive and error-prone. To address the challenges this project proposes an augmented reality (AR) and computer vision (CV) integrated approach aiming to monitor the construction progress automatically and accurately. First, the AR module establishes a virtual environment that links the real environment with its corresponding BIM model via AR tags. Then, the CV inference module captures and recognizes the physical model using the convolutional neural networks (CNN). Last, a well-designed user interface is developed so that stakeholders can intuitively interact with the AR and CV modules. A mobile application is developed to showcase the feasibility and efficiency of the proposed innovative approach where a case of modular integrated construction (MiC) is demonstrated. The results show that the proposed approach enables automated progress monitoring in a real-time manner, and further offers augmented 3D visualisation with enriched construction information for accurate progress analysis, which will be an advanced digital solution for enhancing current practices.



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