Department of Mathematics and Computing Science

Saint Mary's University
SCIENCE

MSc in Applied Science Thesis Defense

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Occlusion-Aware Image Composition: Leveraging Depth Maps

Supervisor: Dr. Jiju Poovvancheri

Object placement in images is a multifaceted task with wide-ranging applications across various domains such as image editing, virtual reality, and computer graphics. However, existing methods often encounter significant challenges such as unnatural blending, depth misalignment, and unrealistic occlusions, among others. In this thesis, we propose a comprehensive approach to address these challenges by leveraging depth maps and introducing a novel depth-aware loss function tailored specifically for object placement tasks. The method integrates depth maps for improved object placement, enhancing depth coherence and realism. The depth-aware loss function optimizes placement by penalizing depth inconsistencies thus improving occlusion handling. Additionally, an aerial dataset of 4600 images has been created for testing object placement semantics. Extensive experimental evaluations conducted on diverse datasets and scenarios validate the effectiveness and robustness of our proposed approach. Quantitative analysis demonstrates superior occlusion handling capabilities compared to conventional methods of image composition.

Monday, May 6 @ 11:00 am
via MS Teams

Please email mathcs@smu.ca by
Friday, May 3 @ 3:00PM
for connection details.

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