



COLLEGE of ENGINEERING
AND PHYSICAL SCIENCES

SCHOOL OF COMPUTER SCIENCE

MSc Seminar

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*Visibility-Aware Pixelwise View Selection for
Multi-View Stereo Matching*

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Abstract:

The performance of PatchMatch-based multi-view stereo algorithms depends heavily on the source views selected for computing matching costs. Instead of modeling the visibility of different views, most existing approaches handle occlusions in an ad-hoc manner.

To address this issue, we propose a novel visibility-guided pixelwise view selection scheme in this paper. It progressively refines the set of source views to be used for each pixel in the reference view based on visibility information provided by already validated solutions. In addition, the Artificial Multi-Bee Colony (AMBC) algorithm is employed to search for optimal solutions for different pixels in parallel. Inter-colony communication is performed both within the same image and among different images. Fitness rewards are added to validated and propagated solutions, effectively enforcing the smoothness of neighboring pixels and allowing better handling of textureless areas.