

Robot-operated Indoor Scene Reconstruction with Proactive Object Analysis

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Abstract:

In this talk, I will introduce a system of autonomous scene scanning operated by a robot. In an autonomous setting, detailed scene acquisition is inevitably coupled with scene analysis at the required level of detail. We develop a framework for object-level scene reconstruction coupled with object-centric scene analysis. We drive the robot to execute an iterative analyze-and-validate algorithm which interleaves between object analysis and guided validations. The object analysis is based on online learning, achieving global update of object-level segmentation based on the knowledge gained from robot-operated local validation. Based on the current analysis, the robot performs proactive validation with physical push and scan refinement, aiming at reducing the uncertainty of both object-level segmentation and object-wise reconstruction. The output is a reconstructed scene with both object extraction and object-wise geometry fidelity.



徐凯，2011年9月于国防科大计算机学院获得博士学位。2008至2010年赴加拿大西蒙弗雷泽大学进行访问研究。研究兴趣为几何处理与建模、计算机视觉、机器人三维感知等。在SIGGRAPH和SIGGRAPH Asia发表论文12篇。现担任Computers & Graphics、The Visual Computer期刊编委。曾担任SGP、PG、GMP、Chinagraph等会议的程序委员。担任GDC 2016的程序委员会共同主席。