Seminar/Talk

The Semantics of Visual Localization and Mapping

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Host: Christoph Lampert

3D scene perception is a key ability for robots, as well as for any type of intelligent system designed to operate in the real world. Among 3D scene perception algorithms, methods for 3D mapping reconstruct 3D models of scenes from camera images. Visual localization techniques in turn use these maps to determine the position and orientation of one or more cameras in the world. Visual localization and mapping are thus fundamental problems that need to be solved reliably and robustly in order to enable autonomous agents such as self-driving cars or drones.At the same time, localization and mapping algorithms are key technologies for Mixed and Augmented Reality applications.Over the last years and decades, tremendous progress has been made in the area of 3D Computer Vision, including impressive results for localization and mapping. Still, localization and mapping techniques can be rather brittle in challenging scenarios that are highly relevant for practical applications. This talk gives an overview over these challenges and explains how a higher-level understanding of the environment can help to solve some of them. In particular, I will present algorithms for localization and 3D reconstruction that rely on semantic information. This higher level of abstraction allows them to succeed under challenging conditions that could not be handled by previous work relying on purely photometric or geometric cues. I will then outline how these techniques can be extended to tackle a certain family of open problems. I will finally conclude the talk with a set of examples showing that algorithms for 3D scene perception will need to become even smarter in order to allow complex scene interactions for robots and other types of intelligent systems.

Wednesday, December 6, 2017 11:30am - 12:30pm
Mondi Seminar Room 3, Central Building

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