

Keynote Address 2

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Machine Vision - Trends in Mobile Robot Localization and Mapping Using Vision Sensors

One of the central challenges of computer science and mechatronics is to build machines that can navigate in and interact with the world. Vision is one of the most important sensory modalities for humans, and since much of the human-made world is designed for bipedal animals that see, cameras are among the most useful sensors for robots. Two of the critical tasks for mobile robots are localization (knowing where you are) and mapping (knowing what is around you). Both tasks require solutions to the engineering problem of inferring hidden state (robot position or world structure) from noisy sensor data (2D images, in the case of vision). In this talk, I will provide an overview of recent progress in machine vision techniques and inference algorithms for mobile robot localization and mapping using vision sensors.