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Computer Vision for Robotics in the Home, Factories, and Space.

Robotics has advanced rapidly into many aspects of life, including the home, workplaces, the military, and space exploration. Facilitating this growth is our understanding of vision-based sensing, which allows robots to operate safely and efficiently in the real world. Depending on the application, a robot may need to navigate the environment, find, recognize, and manipulate objects, track targets, or interact with humans or other robots. Computer vision techniques, including structure from motion, object/category recognition, detection, and pose estimation support these tasks. This talk will focus on these of computer vision algorithms and their underlying mathematical and statistical methods. (Received September 25, 2012)