



MARTIN PERSSON received his MSc degree in Applied Physics and Electronic Engineering from the University of Linköping, Sweden, in 1994. He has been employed by Saab since 1994 as system engineer working mainly with modelling and simulation of airborne platforms and synthetic natural environments. His research interests are visual servoing in aerial applications and semantic mapping of outdoor environments using mobile robots.

Semantic mapping is understood to be the process of putting a tag or label on objects or regions in a map. This label should be interpretable by and have a meaning for a human. The use of semantic information has several application areas in mobile robotics. The largest area is in human-robot interaction where the semantics are necessary for a common understanding between robot and human of the operational environment.

This thesis investigates the extraction of semantic information for mobile robots in outdoor environments and the use of semantic information to link ground-level occupancy maps and aerial images. The thesis concentrates on three related issues: 1) recognition of human spatial concepts in a scene using vision-based virtual sensors, 2) the ability to incorporate semantic knowledge in a map, and 3) the ability to connect information collected by a mobile robot with information extracted from an aerial image in order to generate a semantic map that covers a larger area than can be built using only the onboard sensors.



Doctoral Dissertation

Semantic Mapping using Virtual Sensors and Fusion of Aerial Images with Sensor Data from a Ground Vehicle

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Technology