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Engineering : Robotics and Automation

Nüchter, Andreas

# 3D Robotic Mapping

**The Simultaneous Localization and Mapping Problem with Six Degrees of Freedom**

- Complete treatment of 3 dimensional robotic mapping
- Presents the Simultaneous Localization and Mapping Problem with Six Degrees of Freedom
- Presents the algorithms needed for automatic semantic 3D map building using a 3D laser range finder and the mobile robot Kurt3D

Focuses on acquiring spatial models of physical environments through mobile robots The robotic mapping problem is commonly referred to as SLAM (simultaneous localization and mapping). 3D maps are necessary to avoid collisions with complex obstacles and to self-localize in six degrees of freedom (x-, y-, z-position, roll, yaw and pitch angle) New solutions to the 6D SLAM problem for 3D laser scans are proposed and a wide variety of applications are presented

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