

Affordable laser-based navigation for autonomous robots

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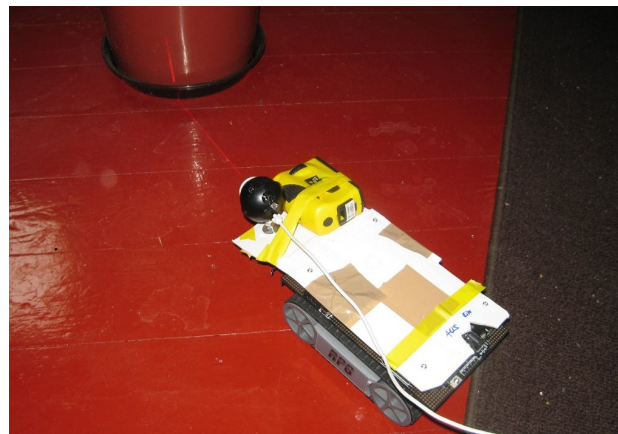
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Navigation in unknown premises is one of the foremost requirements for an autonomous robot. Even if the system is to be used in a fixed indoor setting, end users can not be tasked with complex calibration procedures. While there have been large advances in the field of sensorics and computer vision, the choice of sensory systems still requires tradeoffs between price, accuracy and speed.

The proposed work will attempt to build a laser / camera based sensory system on an autonomous robot, using only low-priced hardware components.



- robot tasks
 - create topographical maps of previously unknown areas
 - autonomously navigate surroundings to increase knowledge
- sensory system
 - CCD camera and line (plane) projecting laser are mounted on a servo motor. Image data is interpreted and integrated on a linux-based, PC-compatible system, allowing comparatively quick and accurate acquisition of 3D environment data
- robot hardware
 - for the prototype, mobility is provided by the Arexx RP6 system
- cost estimate
 - max. 500 EUR for the prototype