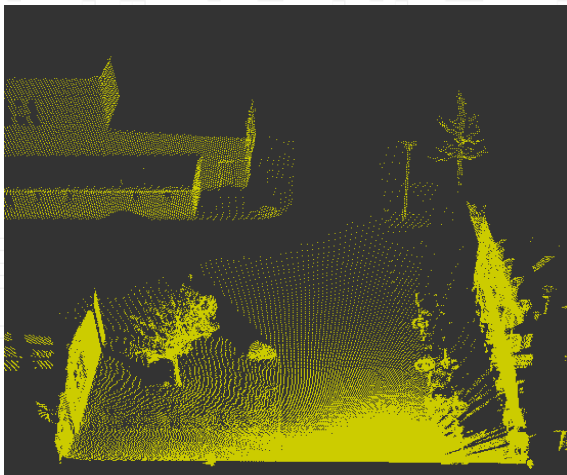
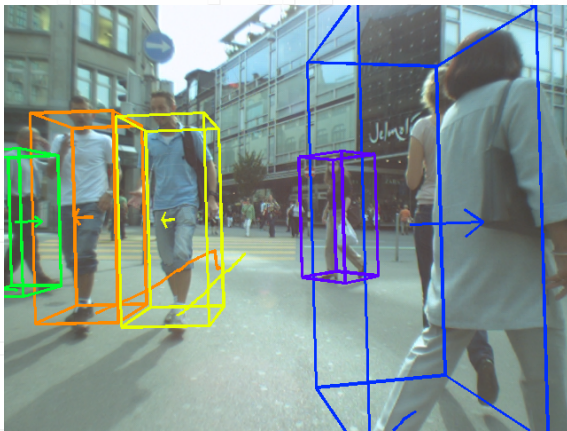


Technical Objectives

The goal of the EUROPA project is to develop the foundations of service robots designed to autonomously navigate in urban environments with the ability to enter shopping malls and shops to provide various services to users including guidance, delivery, and transportation. Based on data gathered with its sensors, the robot will acquire a detailed model of the navigation behaviour according to the current situation, and interact with its users in a natural way, even remotely.

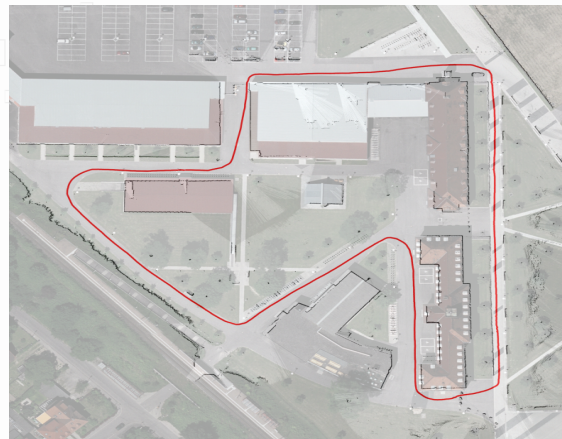


Potential Impact

The proposed system of EUROPA aims at an intuitively usable robot operating robustly in open-ended, everyday scenarios. The project will conduct leading-edge research in the following areas:

- Foundations for representations of dynamic urban environments for autonomously robots navigating robots
- A new theory for topological and semantic descriptions and scene interpretation in complex 3D urban areas
- Means for coupling spatial models and linguistic descriptions
- Innovative methods for detecting and tracking dynamic objects
- Robust navigation in populated outdoor and indoor environments

Various potential applications for the platform are possible in the field of delivery tasks, guidance, secure portage, cleaning device, surveillance.



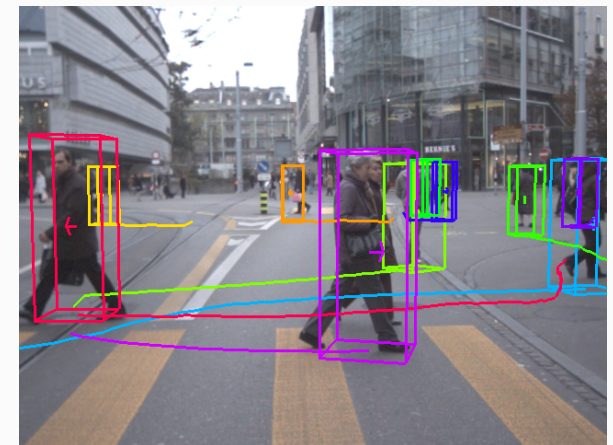
Expected Results

One of the goals of EUROPA is the development of mobile robots operating in dynamic urban environments by developing novel technologies for robots operating amongst various types of dynamic objects including pedestrian, cars, cyclists etc.

A further task will be the development of an efficient tracking system that is fast enough to cater for the real-time requirements of the robotic platform, and sufficiently robust to handle busy urban scenarios.

Concerning robotic mapping, EUROPA will further develop and integrate existing techniques, such as metric, topological, appearance-based, semantic mapping as well as linguistic descriptions of space into a coherent mapping competency providing a suite of high-level cognitive competences to both sibling software modules and the human user.

Additionally, a natural multimodal interaction system will be developed in EUROPA that will be transferred from research labs to robots operating in crowded urban areas.



EUROPA-partners

ALU-FR: The autonomous intelligent systems lab of the University of Freiburg is concerned with techniques for autonomous navigation, state estimation and control in the context of mobile robots and artificial intelligence.

ETHZ: The Autonomous Systems Lab at the Eidgenössische Technische Hochschule Zürich has large experience in the design and autonomous navigation of wheeled and flying of autonomous robots for different kinds of environments.

KUL is part of the Center for the Processing of Speech and Images. The team at KUL is specialised in computer vision and its applications with focus on the sub-domains of 3D acquisition and modeling, as well as on object and object class recognition.

OXFORD consists of two groups of the University of Oxford: The Mobil Robotics Group with international reputation in the area of robotnavigation and the Computational Linguistics Group concentrating on language-based interaction with robots.

BLUE: BlueBotics SA is a Swiss SME active in automation with the ANT® navigation product, and in service robotics with design, navigation, prototyping and production.

RWTH: The Mobile Multimedia group at RWTH Aachen University is concentrating on performing basic research and developing applications in visual object recognition and tracking from mobile devices and robotic platforms.

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**Small or Medium-scale Focused
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