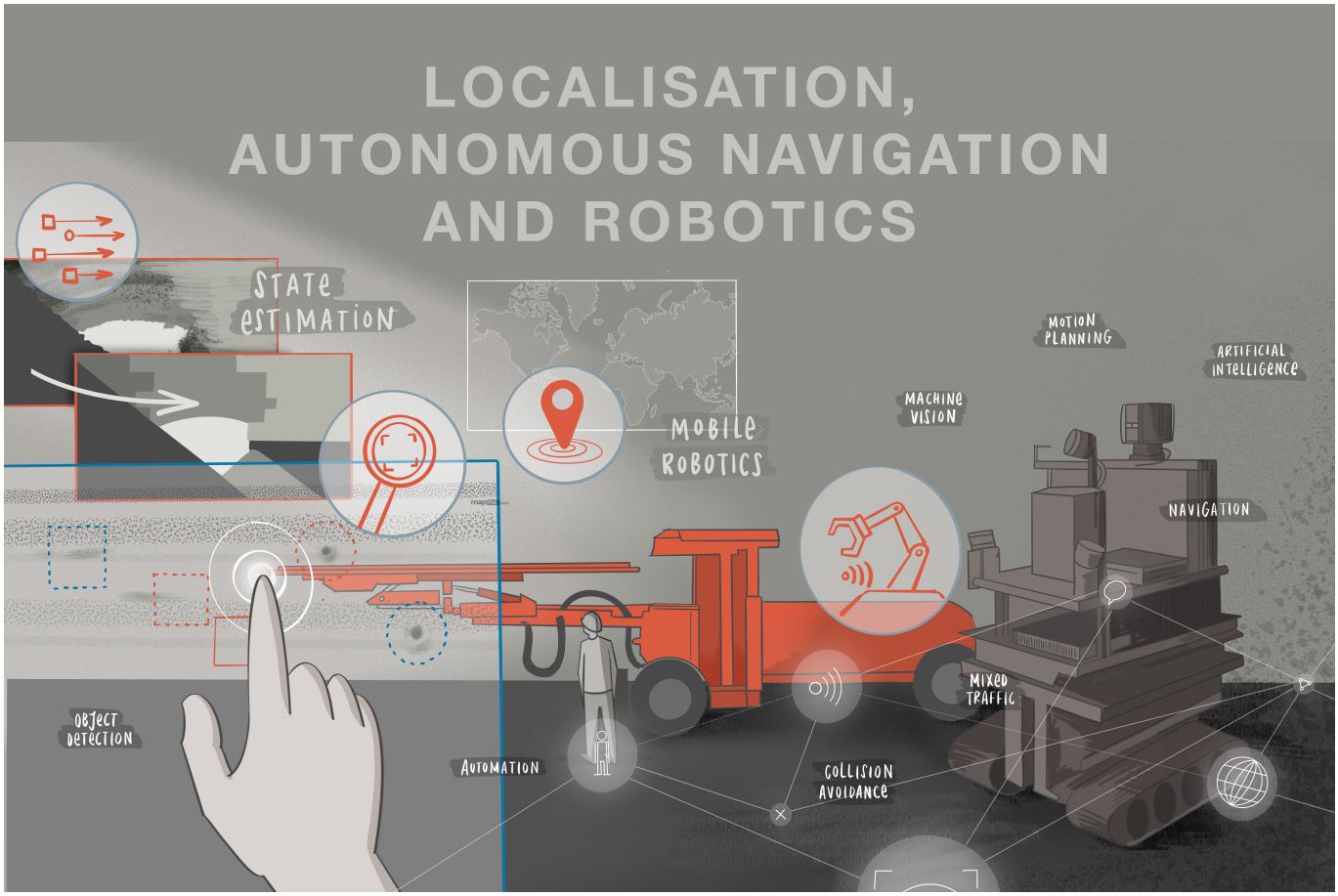
Localisation, Autonomous Navigation and Robotics



In recent years we have witnessed increasing interest of the mining industry in automation and robotics solutions. The key drivers are often increasing pressure from the lack of skilled personnel, stricter regulations and of course the requirement for more efficient and productive mining processes.

Within the research area “Localization, Navigation and Robotics”, we are currently working on a broad range of topics and developments to cope with the special requirements of the mining industry. Specifically, one focus area are custom tailored solutions for the automation of special machinery like drill jumbos or wheel loaders. A key component of these developments are machine vision technologies, utilizing a variety of sensor technologies to guarantee suitable environmental perception under the mining conditions.

Another hot topic is mixed autonomous traffic between autonomous and manually operated machinery. As autonomous machinery is emerging in the mining sector, the implementation of exclusively autonomous operation zones poses challenges for existing mining operations. The realization of mixed autonomous traffic can help to lower the hurdle of implementation of autonomous technologies. Hence, we are working on concepts and technological solutions to implement mixed traffic in a mining operation and the evaluation of suitable safety systems.

Finally, our research efforts include localization and state estimation for a variety of use cases in the mining sector.

Related projects:

- AREA.AI: _____

Completed projects:

- EMD: Localization of the boom and layer thickness monitoring in the concrete spraying process using UWB and INS technology
- MAEX: _____
- SIMS: _
- PAM 4.0: Automation ladle deslagging machine
- UNDROMEDA: _
- UPNS 4D+: Mobile robotics in underground environments, localization, navigation

back to top