TUM Entrepreneurial Masterclass
Technical University of Munich

Tech Venture Challenge

Digging the holes of future construction sites

Market research and business model for collaborative excavation robots

Picture: Gebr. Rubenbauer GmbH

Challenge description

The market volume of the construction industry in Germany is around 145 billion euros. Excavation and underground engineering accounts for almost a third of this. As in other areas of the construction industry, excavation is dominated by simple, mechanized processes that require a large number of manually operated machines.
Due to the shortage of skilled workers and the high demand for new housing as well as transportation routes, excavation and underground engineering is under great pressure. New innovations in the field of automation technology have so far been limited to assistance systems for small subtasks. There are no known solutions based on robotics.

Thesis Focus

Within your master thesis project, you will work on scientific research questions depending on your study program and related to:

- Support in detailing an idea for automated soil excavation based on collaborative robots.
- Carrying out a market analysis for the resulting technical product.
- Development of a business plan for a company that implements the technical concept in software and hardware.
- Extension of the business plan for offering soil excavation as a service.
- Comparison and evaluation of the two business models (technical product vs. service).

Profile and process

You apply individually with a motivation and a CV (but no project draft) and will write an individual master thesis which is suitable to your study program. You should have:

- Motivation to disrupt construction industry
- Enthusiasm for robotics and automation technology
- Exceptional analytical skills
- Willingness to take responsibility
- Background in economics / business administration

Upon successful application, you will become part of the TUM Entrepreneurial Masterclass with all benefits, such as real added value for the ecosystem in and around Munich and access to the UnternehmerTUM ecosystem.

Chair of Materials Handling, Material Flow, Logistics

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