



Master's thesis

Efficiency metrics for coverage path planning

About the topic

Coverage path planning (CPP) is an important task in autonomous field operations. The aim of CPP is to find a path that passes over every point of an area of interest. In agriculture, this task is encountered especially in crop cultivation, including tasks like harrowing and sowing. Measuring the efficiency of a coverage solution is essential for optimizing this task. Goals of the thesis work include:

- Researching state-of-the-art coverage path planning for agricultural applications
- Deriving a set of metrics for measuring the efficiency of coverage path planning
- Programmatic implementation of the computation of the chosen metrics
- Simulation and experimental tests and evaluation

About us

The Chair of Agrimechatronics (Prof. Oksanen) studies especially Intelligent Machines for Agriculture. The research themes include topics like tractors and other agricultural vehicles and robots, tractor-implement automation, communication technologies for vehicles, navigation, guidance and planning, positioning systems, model-based control of mechatronic systems, drives and power systems, and robotic implements.

We offer

As a part of our team, you will have an excellent opportunity to develop your skills in a supportive and inspiring environment. Our work is interdisciplinary, international, and in-depth, but also practical. We offer a possibility to obtain broad and profound expertise, both theory and practise, in the field of agricultural applications, technology and research.

Your qualifications

- A Bachelor's level university degree
- Excellent skills in Matlab/Simulink
- Good written and spoken English
- Good skills in C++/Python are beneficial
- Basic understanding of algorithms for path planning is beneficial

Application process

Start: as soon as possible. Send your application in English by email to riikka.soitinaho@tum.de with title "Master's thesis position application" including curriculum vitae (CV) in English, PDF copies of earned university degrees, and current transcript of records.

Data Protection Information: When you apply for a position with the Technical University of Munich (TUM), you are submitting personal information. Data protection information according to Art.13 of the data protection basic regulation (DSGVO) for the collection and processing of personal data in the context of your application. By submitting your application, you confirm that you have acknowledged the above data protection information of TUM.