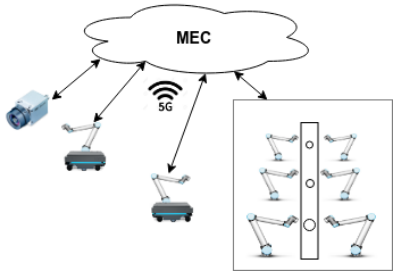
„Indoor Localization with 5G in Industrial Environments “

Topic for Student or Diploma/Master Thesis



Summary: With the continuing digitalization of production towards Industry 4.0, the precise localization of objects in factories is becoming an increasingly important component of industrial processes.

The localization of an object can be done through the radio connection. So far, technologies on freely available frequencies have been used in this context. However, 5G allows campus networks to be set up on dedicated frequencies. In the long term, these should replace company-internal WLAN networks and proprietary industrial radio solutions. Therefore, it is necessary to investigate how knowledge about localization can be transferred from existing frequencies to the new 5G RAN environment.

Possible tasks could be:

- Investigation and Implementation of distance or direction measurement methods such as RSSI, POA, TOA, DOA
- Measurements with 5G hardware, e.g. phones, NICs
- Evaluation of the methods for different KPIs (accuracy, speed)
- Comparison to solutions based on LTE or WLAN

Keywords: localization, industrial networks, 5G, smart factory
Tools: Programming language (C, C++, python), plotting tools.

The language of the project supervision can be English or German.

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