



## Student Thesis

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### Survey on Localization & Radar

Network-side localization denotes the ability for the network to localize a mobile device, as opposed to user-side localization, such as the service enabled by a Global Navigation Satellite System (GNSS) system, whereby the location information is directly obtained by the user, but not necessarily shared with the network operator platform. The ability of the network to physically locate the user has multiple uses e.g. for radio resource management purposes, or for providing location information to the operator in case of emergency calls. Transmitter location information available to network orchestration entities represents an important step towards wireless networks that are not only able to better allocate time-frequency resources to users, but that also have the ability to make use of jamming interference protection mechanisms. Furthermore, sensing capabilities extend, not only to active transmitters, but also to objects if RADAR functionalities are inherently available in wireless communication devices. Given these points, we seek to create a survey that contains the fundamentals & state-of-the-art of sensing techniques (active transmitter localization and RADAR) that will enable the services envisioned for beyond 5G wireless systems.

### Tasks

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- Literature study of the state-of-art localization & radar imaging algorithms
- Create framework for different techniques
- Simulation coding of the studied algorithms
- Implementation of one appropriate algorithm
- Performance analysis & measurements

### Requirements

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- Experience with one or more programming languages (C++, Python, MATLAB, LabVIEW)
- Knowledge about estimation & detection
- Interest in literature review & implementation

### Contacts

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