Title: Network as a Sensor in Agriculture

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Abstract:
Communication systems such as public land mobile networks (e.g., 4G/LTE networks) or low-power IoT networks are ubiquitous, nowadays. Temporal variations of the signal strength of such systems can be leveraged for low-cost crop and soil sensing.

The goal of this thesis is to develop new approaches for approximating crop and/or soil parameters. These approaches will be implemented, deployed, and evaluated on agricultural fields.

Desired skills of the applicant:

- sophisticated programming skills

- experience and/or interest in networked sensors

- experience in software defined radio or multi-channel/radio networking

- willingness to conduct real-world experimental deployments

References:
Liu et al. Integrated Sensing and Communications: "Toward Dual-Functional Wireless Networks for 6G and Beyond", JSAC, 2022
https://doi.org/10.1109/JSAC.2022.3156632

Bauer, Aschenbruck: “Towards a low-cost RSSI-based Crop Monitoring“ ACM Transactions on Internet of Things (TIOT), 2020.
https://dl.acm.org/doi/10.1145/3393667