Master Thesis - System and Architecture for Positioned Data Collection

Ericsson Research
Ericsson Research develops new communication solutions and standards. The organization has responsibility to provide Ericsson with world-class system concepts, technology innovations, and methodologies. The rapidly increasing demands for mobile broadband access in combination with needs for new technology and solutions for the digitalization of industries and societies creates challenging and exciting opportunities for our organization.

Ericsson Network Location
For more than 20-years, Ericsson has provided market leading positioning solutions to operators throughout the world. Built on this experience and technology leadership, Ericsson Network Location is the modern location platform built to answer the need of 5G and IoT location use cases. It provides flexibility for any kind of location use cases thanks to a wide range of 3GPP standard based positioning technologies complemented with Ericsson unique positioning technologies.

Background
One class of positioning technologies is based on radio frequency pattern matching or radio frequency fingerprinting. These methods are based on a training phase where positioned radio frequency measurements are collected and processed to create a fingerprinting database. In the positioning phase, these methods are positioning a device based on radio frequency measurements correlated to the fingerprinting database. Such positioning is capable of addressing many different types of use cases.

Thesis Description
Central to the RF fingerprinting is access to training data that enable the creation of a RF fingerprinting data base that is representative for the service area in consideration and is enabling a positioning performance that matches the requirements. The focus of the Master Thesis is to investigate and systemize an architecture for collection of RF fingerprinting training data from device applications as well as network logs. The device applications range from dedicated logging applications, applications with background logging from service staff, incentive-based logging from specific applications, logging as part of specific applications and services which possibly could open up for logging of data that is only available for training in relation to restricted community usage. Data analysis and post-processing for scalable use and storage can also be a part of the work. The thesis is intended to be partly exploratory and partly considering implementation of selected parts of the scope.

With such a bridging thesis scope, the supervision will be a combination of people from Ericsson Research, Ericsson Network Location and Ericsson system departments.

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Qualifications
This project aims at students in computer science and engineering or similar. Background in client-server work is beneficial.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2021

Keywords
RF fingerprinting, positioning, data collection and management, device applications,