Master Thesis - MLOps driven by event-based CI/CD solutions

Background
Applying DevOps principals to a machine learning (ML) system is termed as MLOps. An ML system is different from a traditional software system in the development and deployment phases. The differences add some additional complexities and thus challenges for orchestrating MLOps solutions. In the software realm, event-based architectures have an edge over traditional architectures for being largely decoupled, providing increased agility and flexibility to the development lifecycle. These architectures are considered very suitable for ML systems. Ericsson has developed a modern, event-driven orchestrator for DevOps. Though its value as a MLOps solution needs to be verified. Therefore, this thesis will consider the design and implementation of the MLOps pipelines with Docklin, an event-driven orchestrator and comparison of Docklin with other available event-based CI/CD orchestrators.

Thesis Description
The following steps are envisioned as part of the thesis work:

- Literature review of available CI/CD (Continuous integration and continuous delivery) orchestration solutions and compare event-driven and non-event-driven orchestration solutions
- Compare Docklin and other event-driven orchestration solutions
- Orchestrate MLOps solutions(pipelines) with Docklin for a standard ML software system
- Analyze the pros and cons of event-driven orchestrators compared to traditional non-event-driven orchestrators.

The thesis will be concluded with a result presentation for the Ericsson team.

Qualifications
This project aims at students in computer science or similar. Background in machine learning or data science is preferred.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2022

Keywords
DevOps, MLOps, Continuous Integration and Deployment

Contact Persons
Momeneh Svanberg  Mohammad Saifullah  Mattias Linnèr
+46 730 43 63 40  +46 709 86 55 25  +46 761 44 07 24
momeneh.svanberg@ericsson.com  mohammad.saifullah@ericsson.com  matts.linner@ericsson.com