Attribute Based Access Control implementation for a collaborative data science platform

Laboratory:
Swiss Data Science Center

Type:
Master Thesis Project

Description:
The Swiss Data Science Center is developing a cloud-based platform for collaborative data science. The platform provides a one-stop shop to data and algorithms, enabling data scientists to easily discover and reproduce the work of their peers in a secure collaborative environment. Using this platform, users can access data and run data analytics in a cloud-based computing environment managed by the platform.

This internship is about designing, implementing and testing a proof of concept of an Attribute Based Access Control (ABAC) systems to authorize the access to the resource entities managed by the platform. The candidate will first demonstrate a policy decision point that grant access rights to users based on policies expressed in the form of Boolean rules that combine attributes from the user, the accessed resource and the environment. Next, the candidate will design an ABAC solution capable to operate in a federated environment, where resources are distributed across multiple administrative domains protected by respective policy decision points with individual access policies.

Goals/Benefits:

- Practical experience in developing complex large scale software systems
- Becoming familiar with state-of-the art application containerization and orchestration technologies such as docker and kubernetes.
- Becoming familiar with cloud-based application development.
- Becoming familiar with state of the art access control paradigms
- Working in an interactive and interdisciplinary research environment.

Prerequisites:

- Intermediate level experience in using Linux
- Beginner level experience with application containerization and orchestration
- Good Python or Scala programming skills
- Good software engineering skills

Contact:
Sandra Savchenko-de Jong, sandra.dejong@epfl.ch