

# **AutoDC degree project**

## **Multimodal machine learning for anomaly detection in cloud operations**

Come join the AutoDC project, which is an international collaboration between academic researchers and companies from Canada, Finland and Sweden, who aim at designing smart and efficient datacenters and cloud solutions. With the expected continued growth in the datacenter market, the cost of operating and running them will increase. The AutoDC datacenters will require less on-site maintenance and be highly autonomous. In addition, the energy efficiency preferably will be significantly reduced. To achieve this the datacenters and cloud services will be instrumented and monitored to collect operations data, which is the fed to a powerful data analytics engine. Neural networks and reinforcement learning are key building block in the AutoDC vision.

In this thesis project you will extend our current anomaly detection framework, which is based on logfile data, to also consider metric data from the IT-equipment and facilities. This will require a machine learning approach that supports reasoning based on data of different categories, i.e. both text and values. We will be working with data from a real large scale cloud service, as well as data from our virtual cloud lab. If successful the applications will become an integral part of the Ericsson data-driven operations toolbox.

Supervisors: Torgny Holmberg (Ericsson), Robert Marklund (Ericsson), Johan Eker (Lund University)