

Postdoctoral Research Fellow – Feature Engineering and Anomaly Detection

University of New Brunswick - Eigen Innovations

LOCATION: Fredericton, New Brunswick, Canada

PROJECT DESCRIPTION:

In machine learning (ML), features, which are individual measurable properties or characteristics of a system being observed, are used as input signals to a predictive model. The process of developing algorithmic solutions for complex problems boils down to determining the necessary set of features that completely describes the dynamics of the system. For industrial manufacturing processes, the relevant features for part quality inspection can be derived from machine sensor data and external imaging sensor data (e.g., colour and infrared cameras). Scaling a ML solution to new applications poses an interesting challenge – *How is part inspection knowledge best transferred from one application to another?*

This project will work closely with the partner organization, Eigen Innovations, to focus on developing new transferable features for part quality inspections, exploring state-of-the-art model architectures, and creating robust anomaly detection tools. Postdoctoral Fellows at Eigen Innovations can interact with industry experts to improve their knowledge of industrial manufacturing, learn from our team of ML experts, leverage vast amounts of inspection data, develop state-of-the-art analysis techniques for advanced part quality inspections, and access industrial machinery, including an injection moulding machine, industrial robots, and various automation equipment.

The Postdoctoral Fellow will contribute to topics such as:

- Anomaly detection;
- Transfer learning;
- Reinforcement learning;
- Graph-based machine learning;
- Advanced control methodologies;
- 3D deep learning;
- Computer vision.

The salary for this position is competitive and the starting date is flexible. The position is for one year, with the expectation of renewal.

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WHO SHOULD APPLY?

We are looking for an ambitious individual with interests and experiences across a broad spectrum, from core machine learning or deep learning research to more applied activities.

REQUIREMENTS:

- PhD or equivalent in Computer Science, Engineering, or a closely related field. You must have completed all requirements of your doctoral degree no more than three years before the application deadline.
- A strong track record in research, demonstrated by peer-reviewed publications and top-tier conference presentations.
- Expertise in a core area of machine learning, such as deep, unsupervised, reinforcement learning, or optimization and experience with applied machine learning, such as natural language, health, vision, or robotics.
- Experience with Unix/Linux and strong programming skills (e.g., Python, C/C++).
- Ability to work well with others towards a common goal.
- Research independence: the ability to take responsibility and initiative to conduct your research as it is required in working towards the common goal.

PARTNER ORGANIZATION – EIGEN INNOVATIONS:

Eigen is an Industrial IoT company that specializes in advanced analytics and machine learning to solve complex, real-time quality problems. We deploy advanced quality inspection solutions that capture machine and sensor data and leverage the cloud to train and generate algorithms that power edge computing within manufacturing. Our research team has access to many advanced tools including thermal cameras and industrial robots, as well as proprietary data analysis techniques that allow us to solve challenging quality inspection problems. We provide an exceptional learning environment and solve real-world manufacturing problems. The company will be working closely with UNB personnel on this project.

CONTACT

If interested, please contact us at careers@eigen.io and share a copy of your CV.