Master Thesis: Deep Learning and Big Data Analytics with Application to Building Hazardous Material Characterization

Company/Unit - RISE is Sweden’s research institute and innovation partner. Through our international collaboration programs with industry, academia and the public sector, we ensure the competitiveness of the Swedish business community on an international level and contribute to a sustainable society.

Do you want to work with important societal and environment challenges using sophisticated Machine Learning (ML) methods? Then come and apply for this master thesis in RISE!

Thesis Subject/Assignment: This master thesis proposal describes work needed in a larger project called National Building specific Information (NBI). The master thesis topic itself is to be chosen by the master thesis student. Examples could be: “Machine learning for predicting hazardous materials in existing buildings”.

The purpose of the project is to provide Swedish authorities and the building sector with information on the existing building stock to reduce unexpected costs for decontamination of hazardous materials in buildings at reconstruction or renovation. Information availability about the Swedish building stock has increased over the last years as different Swedish agencies collect a lot of data about the buildings and their inhabitants. There are also more powerful analyses tools that makes it possible to better understand and plan reconstruction and renovations of the building stock. Due to availability of big data sets from national databases, it is interesting to apply ML and deep learning to recognizing patterns as decision support for policy makers.

The research goal of this thesis is to use machine learning or deep learning to predict building features that could be connected to the presence of hazardous materials which is not yet available in the national databases.

The thesis is performed as part of a larger research project financed by SSF (Stiftelsen för Strategisk Forskning), including the partners Research Institutes of Sweden and the Municipality of Gothenburg. There is possibility for continue as an institute PhD at RISE.

Education
We believe that this assignment should involve two dedicated persons that complement each other well. Areas of interest/education are machine learning (ML)/artificial intelligence, including proficient skills in ML programming-related software e.g. Python or R. No prior knowledge in the field of building stock studies is required.

Scope - 30hp
Course of action - The thesis work will start in the spring of 2020 according to the student schedule and is to be conducted on site at RISE office in Gothenburg, Sweden.

Welcome with your application!
For more information, please contact Claes Sandels, Supervisor at RISE, tel: +46 (0)10 516 59 74, or Irene Yu-Hua Gu, Supervisor/Examiner at Chalmers, email: irenegu@chalmers.se.

Final date for applications: 1 December, 2019.