

Thesis proposal: financial risk and deep learning

About Smartr

Smartr is an expert bureau within data and AI. We work with the entire value chain from data strategy, research, algorithm development, prototyping, validation, software development and data engineering. We have a high level of seniority and we work close to academia. Supervising students at different levels gives us a great opportunity to develop unique skills but also serves as a base for recruitment. We intend to supervise 2-3 projects the spring during 2020.

Thesis project

The literature of quantitative methods for credit or insurance risk is vast. A problem has been that the theoretical results seldom lead to computationally feasible algorithms for practical use for banks and insurance companies. Fortunately, deep learning has opened a new set of numerical methods to overcome computational bottlenecks in the field. In this project the student will work with deep learning algorithms for *Capital Value Adjustment* which determines how much capital the banks need according to the Basel III regulations for their derivative trade.

We seek 1-2 students for this project. The students are expected to have prerequisites in stochastic analysis and mathematical finance. Some experience with TensorFlow or PyTorch is meriting. This is a somewhat challenging thesis topic and the students should be dedicated and seeing forward with excitement to six months of investigations, learning and interaction. The project can be shaped to be meriting for future PhD studies if the student wishes to.

Supervisors

Supervisor at Smartr is Adam Andersson and at Chalmers Annika Lang. PhD student Kristoffer Andersson at CWI Amsterdam will have an additional supporting role in the project. Kristoffer wrote his master thesis for Adam 2018.

Contact and application

A complete application contains CV, personal letter and transcripts from university. Please send it to adam.andersson@smartr.se and feel free to ask any questions.