

Curriculum Vitae for Robert Solli

Personal information

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		Nationality:	Norwegian

Summary

I submitted my thesis in Computational Physics for the degree of M.Sc. in the fall of 2019. In my thesis project, I investigated the application of machine learning to a nuclear physics experiment. At the same time, I held a position as a research assistant at the department of physics. My education and experience have given me a strong analytical background. In particular, I am proficient in efficient numerical programming in multiple languages, advanced machine learning techniques, data processing and database management. As a consultant for Expert Analytics I have developed solutions for power-grid modelling and data ingestion for Statnett SF.

Technical skills

Languages	Python, C++, SQL
Frameworks	Tensorflow, Keras, PyTorch, Scikit-learn, Pandas, Numpy, Sympy, SciPy, Armadillo, MPI, SPARQL, MSSQL
Tools	Git, Linux, L ^A T _E X, Vim

Education

2019	M.Sc. in Computational Physics from the Faculty of Mathematics and Natural Science, University of Oslo. The title of my thesis was " <i>Latent Variable Machine Learning Algorithms: Applications in a Nuclear Physics Experiment</i> ".
2017	B.Sc. in Science, University of Oslo.

Professional experience

2020 –	Consultant at Statnett SF, a large government operated transmission service operator in the power market. Developed high-performant code for data-ingestion, and code for representing views of the power-grid in the CIM standard.
2019 –	Consultant at Expert Analytics AS
2017 – 2019	Research assistant at the Centre for Computing in Science Education (CCSE). Performed quantitative analysis of student behaviour with physics curricula with traditional statistical tools as well as elements from machine learning.
2016 – 2017	Project manager at the Foundation for Student Life in Oslo and Akershus (Studentsamskipnaden i Oslo og Akershus). Scoped and developed the project 'Forening for Alle' with the aim of increasing student participation in volunteer associations.

Languages

Norwegian	Native speaker
English	Fluent

Personal skills

Machine Learning	In my master's studies a large focus was placed on understanding and developing neural network models. I have extensive experience with the TensorFlow and Keras libraries, as well as experience with PyTorch. As a research assistant I was involved in the machine learning group at the Centre for Computing in Science Education. In this work I used neural network models as well as tree-based, classical and support vector algorithms.
Programming	Programming has been a passion of mine from the start of my University education. Most courses featured a programming aspect, and this fostered a growing interest in exploring new technologies.
Problem solving	In my studies and work I have been challenged with hard interdisciplinary problems. These challenges have given me an understanding of how to approach and dissect such problems to find effective solutions.

Some interests and hobbies

Sports	Rock Climbing, Bouldering, Alpine Skiing
Miscellaneous	Cooking, Gaming, Programming

Extended descriptions of selected projects

Activity	Consultant at Statnett SF
Staffing	4 Developers, project management and domain specialist support
Description	Developed solutions for representing the power grid model Statnett SF maintains, in Cognite Data Fusion (CDF). The model captures contextual information about components, as well as electrical connectivity. Additionally, we implemented a pipeline from Statnett's data streaming platform to the contextualized model in CDF. The project also involved coding for the integrity of data ingestion, and several proofs of concept solutions to common power-analysis tasks.
Tools	Python, SPARQL, Cognite Data Fusion, Pandas, Numpy
Activity	Autoencoder methods for track identification in the AT-TPC
Staffing	4 Researchers
Description	The AT-TPC detector at the National Superconducting Cyclotron Laboratory at Michigan State University requires efficient identification of reactions occurring in the detector. Investigating the application of autoencoder neural networks to the identification of these reactions was the topic of my master's thesis. The project involved the construction of a semi-supervised approach to measure the amount of labelled data needed to perform classification. In addition to the semi-supervised approach we investigated autoencoder based clustering algorithms for entirely unsupervised learning of the different reaction types. This work led to a paper submitted to the journal Nuclear Instruments and Methods, currently in review.
Tools	Python, Tensorflow, Keras
Activity	Examining the relationship between student performance and video interactions
Staffing	3 Researchers
Description	As part of my work as a research assistant I investigated whether one can predict delayed performance outcomes from video interactions. The project involved taking raw timestamped interactions with topical videos in a physics lab course. These interactions were used to predict student performance on a presentation tied to the topics presented in the videos. This work led to a paper published in the proceedings of the Physics Education Research Conference 2017.
Tools	Python, SQL, Pandas, Numpy