Curriculum Vitae for Alexander Fleischer

Personal information

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Born:	10.04.1991	Nationality:	Norwegian

Summary

I submitted my master thesis in computational physics in the beginning of 2018. The objective of the thesis was building a C++ application for simulating quantum dots. My goal was to develop code that was up to par with industry standards and my focus was on writing good, readable code with extensive unit-testing. In addition to C++ I used Python for data analysis during my thesis. As a developer, I've cultivated my Python skills, and I now have eight years of experience with Python. I am currently working on a project at the transit company Ruter.

Technical skills

Frameworks	Numpy, Armadillo, MPI, Flask, PyPDF2,
Languages	Python, C, C++, Javascript, Java, MATLAB, Bash, PHP
Tools	Git, Vim editor, Unix, LaTeX

Education

2018	M.Sc. Computational Physics from the Department of Physics, University of Oslo. Title of thesis: "Monte Carlo Studies of Quantum Dots". Supervisor: Professor Morten Hjorth-Jensen.
2017	B.Sc. in Physics, University of Oslo.

Professional experience

2018–	Consultant at Expert Analytics
2015–2017	30
2013–2017	Course Leader at Forskerfabrikken Summer School
2013–2014	Private Tutor at Studenthjelp privatundervisning

Languages

English	Fluent
Norwegian	Mother tongue

Personal skills

Problem solving	Both my current project, previous work experience and my master thesis has taught me to work independently and assess the task at hand.
Programming	During my education, practically every subject involved some form of programming and I also enjoy recreational programming and scripting. I have eight years of Python programming experience and about five years of experience with Git.
Quick learner	I like to learn, and do so quickly, in particular about programming and science.
Written communication	I like writing clear and concise texts. Everything from popular science to documenting code.

Extended descriptions of selected projects

Activity	Stop Poster Production System (flakmotor), Trafikantinformasjon- og designprogram (TID)/Ruter As)
Period	February 2018—December 2018
Role	Developer
Staffing	1 developer
Volume	100%
Description	The Stop Poster Production System" is Ruter's system for automated generation of timetable posters for the 8000 bus stops in Oslo and Akershus. I further developed the backend logic and expanded the system to a self-service website for easily generating and distributing large quantities of stop posters at a time. The website was developed with the Python micro-framework and hosted using Apache. I also implemented the Travelling Salesman Problem for finding the quickest route between a set of bus stops for more efficient deployment of stop posters. In addition to development, I planned and ordered the change of stop posters during the bianually route updates.
Tools	Python, Javascript, Flask, Apache, Google OR-Tools, Google Maps API

Activity	Monte Carlo Studies of Quantum Dots
Staffing	2 researchers

Description	For my master thesis, I developed software for finding the ground state energies of quantum dots (fermions) using the variational Monte-Carlo method. The program handles different potential wells like the single and double harmonic oscillator and the finite square well. Furthermore I solved the Schrödinger equation of the potential systems to obtain one-particle wavefunctions of the energy states. The resulting wavefunction was then written as a linear combination of simple harmonic oscillator basisfunctions which were used in the Monte-Carlo solver and compared against the results of the original Monte-Carlo simulations. The code was primarily C++ with some data analysis in Python. I put effort and focus on unit testing and writing clean code.
Tools	C++, Python, Armadillo, MPI, Numpy