Curriculum Vitae for Alexander Fleischer

Personal information

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Born:	10.04.1991	Nationality:	Norwegian

Summary

In 2018, I received my master's thesis in computational physics. 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 I focused on writing good, readable code with extensive testing. In addition to C++ I used Python for data analysis. As a developer, I've cultivated my Python skills, and I now have ten years of experience with Python. Since February 2018, I have been working on a project at the transit administration company Ruter.

Technical skills

Frameworks	Numpy, Flask, Armadillo, Google OR-tools, PyPDF, Reportlab, uWSGI, Pandas, Node/React, Unittest, MPI
Languages	Python, C, C++, PostgreSQL, Javascript, Java, MATLAB, Bash, PHP
Tools	Git, Vim editor, Unix, LaTeX, Docker

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 percent position as IT Support at the Department of Physics, University of Oslo
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.
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.

Some interests and hobbies

Personal	Powerlifting, Football

Extended descriptions of selected projects

Activity	Project at Ruter As
Period	February 2018—March 2020
Role	Developer
Staffing	1 developer
Description	Worked as a fullstack developer developing a backend system for automatic generation of production files (PDFs) for analogue transit stop information, and a web app for the users. In addition, I implemented a tool for generating optimal routes between stops, as well as other tools for the project.
Tools	Python, Javascript, Flask, PostgreSQL, Apache, Google OR-Tools, Google Maps API, Entur API

Activity	Project at Ruter As
Period	February 2018—March 2020
Role	Developer/adviser
Staffing	3 developers, 1 supervisor, 1 UX/UI designer
Description	We developed a content management system in form of a web app for Ruter. In addition to some development (Node/React), I advised the team on the direction of the project, performed daily code review and contributed to sprint retrospects and planning.
Tools	Javascript/Node, React, PostgreSQL, AWS, Jenkins, Python

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