# Curriculum Vitae for Jakob Emil Schreiner

## Personal information


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| Address: | Presidentgata 3a<br>0474 Oslo | E-mail:<br>Phone: | jakob@xal.no<br>+47 991 52 009 |
| Born: | 26.02.1992 | Nationality: | Norwegian |


## Summary


I submitted my master's degree in Computational Science and Engineering at the University of Oslo in 2016. My educational background is in mathematics and computational science applied on mechanical problems using numerical methods. This has fuelled my interest for science and technology. I have mainly used Python and have substantial experience using numerical libraries such as Numpy/Scipy and FEniCS. I am also familiar with C/C++ and Java. My experience include teaching introductory Python at the University of Oslo, mostly in one-to-one settings.

Before joining Expert Analytics I was engaged as a Research Engineer at Simula Research Laboratory. In my thesis I simulated the cerebrospinal fluid flow in patient specific geometries. I solved partial differential equations with the finite element method using supercomputers, both in my master's thesis and during my work at Simula. Through my education and work I have gained significant experience with numerical simulations and mathematical modelling, as well as problem solving in general.


## Technical skills

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| Frameworks | MPI, Numpy, Scipy, Matplotlib, FEniCS, Pybind, Tensorflow, scikit-learn, keras |
| Languages | Python, Java, C/C++, Bash |
| Tools | Git, Vim editor, Linux, Paraview, LaTeX |

## Education

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| 2017 – | Ph.D in mathematics at Department of Mathematics, University of Oslo. The project is a collaboration between Expert Analytics, Simula Research Laboratory, Haukeland Universitetssykehus and the University of Oslo. Supervisors: Professor Kent-Andre Mardal, Ph.D Ola Skavhaug, Ph.d, MD Leif Oltadal, Professor Aslak Tveito |
| 2014 – 2016 | M.Sc in Computational Science and Engineering at the University of Oslo. My thesis was titled *Computational Fluid Mechanics Modelling of Cerebrospinal Fluid Flow in Patient Specific Geometries. Supervisors: Professor Kent Andre Mardal, Postdoctoral Fellow Erika Kristina Lindström* |
| 2011 – 2014 | B.Sc degree in applied mathematics at the University of Oslo. |

## Professional experience

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| 2013 – 2015 | Teacher's assistant at the University of Oslo in the introductory course to Python for scientific applications.<br>I was responsible for a weekly programming lab as well as student evaluation. |
| 2016 – 2017 | Research Engineer at Simula Research Laboratory.<br>I developed code for the simulation of the fluid structure interaction between the blood flow in the Ophthalmic artery and arterial wall as part of the iBrainSafeCLOUD project. |
| 2017 – | IT Consultant at Expert Analytics AS. |

## Languages

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| English | Proficient for professional work |
| Norwegian | Mother tongue |

## Personal skills

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| Problem Solving | I can grasp new ideas and technologies relatively easily, and enjoy using mathematics to get solve real world problems in a broad range of fields. |
| Technology | I am always eager to learn anything new in science and technology. |

## Some interests and hobbies

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| Personal | History, Economics, Bicycling |

## Extended descriptions of selected projects

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| Activity | Computational Fluid Dynamics Modelling of Cerebrospinal Fluid Flow in Patient Specific Geometries. |
| Role | Researcher and developer |
| Staffing | 1 researcher |
| Description | In my master's thesis I simulated the cerebrospinal fluid flow in patient specific geometries, with the goal of reproducing the measured velocity and pressure. |
| Tools | Python, FEniCS, vmtk and ParaView |

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|---|---|
| Activity | Finite Element software for the fluid structure interaction in the Ophthalmic artery. |
| Role | Researcher and developer |
| Staffing | 2 researchers |
| Description | During the fall of 2016 I worked at the iBrainSafeCloud project at Simula Research Laboratory as a research engineer. The work involved writing a fully decoupled fluid structure interaction solver. Furthermore, we made a web user interface enabling non-expert users to perform simulations on a supercomputer. It was implemented using the Python interface of FEniCS. |
| Tools | Python, FEniCS and Git |

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|---|---|
| Activity | Finite element and mesh generation software for modelling of electroconvulsive therapy. |
| Role | Researcher and developer |
| Staffing | 1 researcher |
| Description | During a six week project I created a simulator for the electrical currents in the human brain intended for simulations of electroconvulsive therapy. The software includes geometrical modelling and mesh generation for the skull and brain, as well as an efficient numerical solver using the finite element method. The project was in cooperation with Simula Research Laboratory. |
| Tools | Python, FEniCS and Git |

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| Activity | Machine learning for OncoImmunity |
| Role | Consultant |
| Staffing | 5 defelopers |
| Description | OncoImmunity develop bioinformatics software that has the ability to empower precision cancer immunotherapy, and thus improves the outlook for patients with late-stage disease. My role is to develop machine-learning methods applied to genomic data for tumor immune profiling. The goal is to select optimal patients to be assigned to cancer immunotherapy clinical trials. |
| Tools | Python, Keras |