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Education PhD Applied Mathematics **University of Alberta**, 2011
 MSc Applied Mathematics **University of Alberta**, 2006
 BSc Honors Applied Mathematics **University of Alberta**, 2001

Work History Simulation Scientist, **Computer Modelling Group Ltd**, since 2016.

- Working in a corporate environment on a petroleum reservoir simulator software project written in **C#** and **C++**.
- Improved software performance, stability, and test quality.

Postdoctoral Researcher, **IRMA**, Université de Strasbourg, France, 2014 to 2016.

- Implemented a discontinuous Galerkin solver in **C** and **OpenCL** that can use CPUs, GPUs, and MICs to simulate nuclear fusion reactors.
- Increased software performance by an order of magnitude.

Postdoctoral Researcher, **M2P2**, Aix-Marseille University, France, 2012 to 2014.

- Designed a **Fortran** simulator for simulating magneto-hydro turbulence.
- Ported code to a grid computing environment with thousands of cores.

Graduate Student, **University of Alberta**, Canada, 2003 to 2011.

- Developed a coherent research program in applied mathematics.
- Presented at conferences and publish articles in peer-reviewed journals.

Selected Projects **CoFlow** (www.cmgl.ca/coflow), Computer Modelling Group Ltd.

- High-performance Petroleum Reservoir Simulator
- Hybrid OpenMP/MPI **C#** solver with a **C++** core.
- Work in 50 person team, collaboration with off-site partners.
- Improved multi-threaded linear solver performance by 10×.

fftw++ (fftwpp.sf.net), primary developer.

- Implementation of implicitly dealiased convolutions:
 - Twice as fast and half the memory.
 - Applications to image processing, machine learning, simulations.
- MPI/OpenMP implementation of FFTs and convolutions for grid computing.
- Resulted in 5 publications and several conference presentations so far.
- Over 15 000 downloads.

schnaps (schnaps.gforge.inria.fr), primary developer.

- A discontinuous-Galerkin solver for general numerical simulations.
- Written in **C** and **OpenCL**. Runs on CPUs, GPUs, and MICs.
- Resulted in one publication and several conference presentations.

Skills Collaboration and project management.
 Public speaking and scientific writing. Proficient in English and French.
 Expertise in mathematical modelling and high-performance computing.
 Knowledge of dynamical systems, numerical methods, and statistics.
 I program in **C++**, **C**, **C#**, **OpenCL**, **Python**, and **Fortran**, using **OpenMP** and **MPI**.
 Linux, Windows, version control, grid computing environments.
 Data analysis and visualization: **L^AT_EX**, **R**, **Asymptote**, and **Paraview**.