

Curriculum Vitae for Emil Løvgren

Personal information

Address:	3. Strøm terrasse 7 3046 Drammen	E-mail:	emil@xal.no
Born:	7 th February 1975	Phone:	+47 40 23 10 24
		Nationality:	Norwegian

Summary

I am a technology enthusiast with background from applied mathematics, numerical analysis and mechanical engineering. As a researcher at the Norwegian University of Science and Technology and later at Simula Research Laboratory I worked on research projects focusing on numerical methods for CFD, fluid-structure interaction and mesh generation. In particular I worked on Finite Element Methods, Spectral Element Methods and Reduced Basis Element Methods with applications to geometrically complex flow systems.

After leaving academia in 2009, I have been working in the private sector as a strategy consultant for research and development projects in a wide variety of industry projects. After more than 300 projects I have seen the value of research in industry and I believe there are huge benefits from establishing a stronger collaboration between industry and academia. With the close ties between the researchers at Expert Analytics and e.g. the University of Oslo I think Expert Analytics plays an important role in this context.

Technical skills

Languages	C, C++, CSS, HTML, Java, Python
Scientific	Finite Element Methods, Spectral Element Methods, Computational Fluid Dynamics, Fluid Structure Interaction models, Numerical Analysis, Mathematical Modelling, Mesh generation and mapping of geometries
Tools	Copper, Excel, Linux, Git, Matlab, Numpy, Pandas, SuperOffice (CRM)

Education

2002 - 2005	Dr. Scient. in Numerical Analysis. Norwegian University of Science and Technology. Thesis title: "Reduced Basis models for hierarchical flow systems".
1993 - 2002	Cand. Scient. in Mathematics - Numerical Analysis. University of Oslo. Thesis Title "Multigrid preconditioning for the approximation of scattered data".
1994 - 1998	Mechanical Engineer. University of South-Eastern Norway.

Professional experience

2020 –	Consultant. Expert Analytics AS
2018 – 2019	Project Manager. Energy Valley
2012 – 2018	Managing Consultant. Nofas AS
2009 – 2012	Project Manager. Nofas AS
2008 – 2009	Post Doc.. Simula Research Laboratory
2007 – 2006	Post Doc.. Norwegian University of Science and Technology/Simula Research Laboratory
2005 – 2002	PhD student. Norwegian University of Science and Technology
2000 – 2002	Tutor in Mathematics. University of Oslo
1997 – 1998	Machine operator. A/S Pals

Languages

English	Fluent
German	Basic
Norwegian	Native
Swedish	Native

Personal skills

Communication	Excellent communication skills and an expert in technical writing.
Funding	Extensive knowledge of Norwegian public funding schemes from the Research Council and Innovation Norway.
Management	Skilled in organising technical industry seminars, innovation workshops and design thinking hackathons. Experience from customer relations management and administration of joint industry projects.
Strategic analysis	Broad experience from business development projects involving re-search strategy, project planning and realising the innovation potential of research projects.

Some interests and hobbies

Other	Music - Playing bass guitar, Politics, Organising sporting events
Sports	Cross country skiing, Running, Snowboarding
Tech	Additive Manufacturing, Automation, Generative Design, IOT, Robotics

Extended descriptions of selected projects

Activity	Reduced Basis modeling of Biomedical Fluids. Research project funded by the Research Council of Norway.
Role	Project leader
Description	The project was part of the Center for Biomedical Computing at Simula Research Laboratory. The aim of the project was to apply the reduced basis element method to compute and simulate e.g. blood flow in deformed geometries. Work included the development of the reduced basis element method for fluid-structure interaction problems. In collaboration with the Norwegian University of Science and Technology, École Polytechnique Fédérale de Lausanne (Switzerland), and Université Pierre et Marie Curie (Paris, France).
Tools	C, C++, CSV, Matlab.

Activity	CFD modeling of the cerebrospinal fluid surrounding the spinal chord and lower part of the brain.
Role	Project participant
Description	The project was part of the Center for Biomedical Computing at Simula Research Laboratory. The aim of the project was to investigate the effect of patient specific malformations blocking the flow of the cerebrospinal fluid through the foramen magnum passage into the skull. The Chiari I malformation typically causes headaches and severe pain for the patients, but the relationship between severity of malformation and symptoms is unclear. Studies were made in collaboration with the University of Wisconsin (Madison, USA).
Tools	C, Matlab, Python, StarCD.

Activity	Using the spectral element method to assess the quality of a global C^1 map.
Role	Project leader
Description	The project idea is to use known polynomial convergence rates of the spectral element method to assess the computational quality of deformed grids. The goal was to develop a method for transfinite mapping of a structured grid on a regular polygon to a computational grid on a deformed version of the polygon, and to control the quality of the computational grid and the solutions computed. In collaboration with the Norwegian University of Science and Technology and Université Pierre et Marie Curie (Paris, France).

Tools

C, Fortran, Matlab, Python.