Louis Viot

30 Avenue Henri Pontier
Building C2
Aix-en-Provence, 13100 France

Mobile Phone: (+33)628685904
E-mail: louis.viot@cea.fr

Employment

2018 - Current : Internship supervisor, DTN/SMTA/LMAG, CEA Cadarache.

2015 - Current : PhD Thesis, DTN/SMTA/LMAG, CEA Cadarache.

Expecting to graduate in september 2018.

PhD Title : "Modeling and simulation of complex systems for nuclear severe accidents".

Supervisor : Florian De Vuyst, LMAC, UTC, Sorbonne Universités, 60200 Compiègne.

Supervisor : Laurent Saas, DTN/SMTA/LMAG, CEA Cadarache.

Brief Synopsis of Research : the simulation of severe accidents in nuclear reactors leads to coupled problems of multiphysics and multiscale models. These models can be of different types going from refined models, e.g. mesh based models, to coarse-grained models, e.g. stationary or lumped parameter models. Furthermore, they often have internal states with transitions potentially associated with discontinuities. Altogether, the simulation of severe accidents requires to solve complex systems composed of a wide variety of interacting models. During the thesis, coupling schemes and synchronization techniques have been studied and designed to accuratly solve these systems. A new software architecture has been integrated in the already existing CEA's platform named *PROCOR* and numerical analysis and calculations have been performed on representative and real industrial test cases.

2015 : Six months research internship, CEA Cadarache.

Brief Synopsis of Research : Implementation of a predictor/corrector numerical scheme in a code (*Java*) for nuclear reactor severe accidents.

2014 : Two months research internship, Polytechnic Institute, Bragança, Portugal.

Brief Synopsis of Research : Teeth extraction from dental x-ray using contour detection, image segmentation, texture pattern recognition and Chan-Vese active contour methods.

Skills

Applied mathematics : Numerical analysis, Optimization, Topology, Linear Algebra, Differential equation, Measure and distribution.

Computer science : Object-oriented, Imperative and Functional programming, Software architecture, Computer architecture, Parallel algorithms, Critical software, Distributed system, Grid computing, Distributed computing, Cloud computing.

Operating systems : UNIX (Linux), Windows and Mac OS.

Programming : Java, C, C++, Python, Fortran, OcamL, Haskell, ADA, Prolog, LaTeX.

Software : PROCOR, Git, Svn, MatLab, Scilab, Maple.

Spoken Languages : French (mother tongue), English (upper-intermediate level, fluent in written and spoken, TOEIC : 975), Russian and German (beginner).

Education

2015 - Current : PhD in Computer Science and Applied Mathematics, CEA Cadarache.

PhD Title : "Modeling and simulation of complex systems for nuclear severe accidents".

2014 - graduated in 2015 : MSc in Distributed Systems and Critical Software, Toulouse.

2012 - graduated in 2015 : INP ENSEEIHT, a top ranking French engineering school, Toulouse.

Institute of Engineering in Electrical Engineering, Automation, Electronics, Computer Science, Applied Mathematics, Hydraulics, Telecommunications.

Engineering Degree in Applied Mathematics and Computer Science.

2010 - graduated in 2012 : Classes préparatoires (MPSI, MP*), Lycée Clemenceau, Reims.

Two years of intense preparation for selective entrance to engineering schools.

Courses included : Mathematics and Physics.

2007 - graduated in 2010 : Baccalaureat S, Lycée François Bazin, Charleville-Mézières.

Passed with distinction, equivalent to A levels in science

Publications and Conference Papers

"Main outcomes from the IVR code benchmark performed in the IVMR project", in Proc. of the 9th European Review Meeting on Severe Accident Research (ERMSAR2019), Prague, Czech Republic, 2019.

"Solving coupled problems of lumped parameter models in a platform for severe accidents in nuclear reactors", *submitted* in International Journal for Multiscale Computational Engineering, 2018.

"Hybrid lumped/distributed parameter model for treating the vessel lower head ablation by corium during a LWR severe accident", in Proc. of the 27th International Conference Nuclear Energy for New Europe (NENE2018), Portorož, Slovenia, 2018.

Conferences and Seminars

"Hybrid lumped/distributed parameter model for treating the vessel lower head ablation by corium during a LWR severe accident", 27th International Conference Nuclear Energy for New Europe (NENE2018), Portorož, Slovenia, 2018, *(Oral presentation)*.

"Solving coupled problems of lumped parameter models in a platform for severe accidents in nuclear reactors", 2018, European Conference on Computational Mechanics, Glasgow, UK, *(Oral presentation)*.

"Solving coupled problems of lumped parameter models in a platform for severe accidents in nuclear reactors", CEMRACS Summer school (organized by SMAI), 2017, CIRM, Marseille, *(Poster presentation)*.

Summer schools

Numerical simulation thematic school (ETSN) : "Validation of numerical simulation and quality of computation codes" organized by CEA/DIF with LRC MESO (CMLA - ENS Cachan), 2018, Cargèse.

CEMRACS : "Numerical methods for stochastic models: control, uncertainty quantification, mean-field", 2017, CIRM, Marseille.

Numerical simulation thematic school (ETSN) : "Methods for interface tracking" organized by CEA/DIF with LRC MESO (CMLA - ENS Cachan), 2017, Cadarache.

Numerical simulation thematic school (ETSN) : "Complex flows, advanced schemes, singularity treatments and high performance computations in hydrodynamic", organized by CEA/DIF with LRC MESO (CMLA - ENS Cachan), 2016, Cadarache.

Interests and additional information

Sports : Cycling, Mountain Bike, Rugby.

Reading and Writing : winner of the "Etonnants-voyageur" prize for young writers in 2008.