Artur K. Lidtke

Summary

Self-motivated engineer with background in scientific software development, underwater vehicle design, experimental and numerical fluid dynamics, and applied R&D. Keen on applying knowledge to practical engineering problems, characterised by a can-do attitude and commitment to his work.

Personal information

Not available in the online version
Not available in the online version

Work and professional experience

Employment

Sep 2018 - Present — Researcher in Computational Fluid Dynamics RnD Group
Maritime Research Institute Netherlands (MARIN), Wageningen, The Netherlands

- Development of new and improvement of existing functionality of the in-house computational fluid dynamic code, ReFRESCO (Fortran 95 & 03), and associated autmated test framework.
- Management of on-going research projects, identification of new opportunities and external funding.
- Superivision of PhD- and MSc-level students.
- Detailed validation of developed models and implementation of automated test suites.
- Data analysis and automation (Python, bash).

Jan 2016 - Aug 2018 — Research Fellow in Maritime Robotics - EU BRIDGES consortium
Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Undertook hydrodynamic and mechanical design of two autonomous underwater gliders.
- Used computational and experimental fluid dynamic analysis for performance evaluation of underwater vehicle hulls, rudders and thrusters.
- Led the hydrodynamic design work package liaising with industrial and academic partners to establish project timelines and prioritise design activities on system and sub-system level.
- Designed, built, tested and used wind tunnel dynamometry systems for precision measurements.
- Wrote software for propeller design, AUV mission simulation, data analysis (Python).

Oct 2013 - Jun 2017 — Doctoral Researcher in Marine Hydrodynamics
Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Carried out development of acoustic tools (Ffowcs Williams-Hawkings analogy) and numerical models for cavitation prediction inside the OpenFOAM package (C++).
- Applied both methodologies to study the hydroacoustics of marine propellers and hydrofoils.
- Developed data analysis and CFD automation tools (Python and C++).

Consultancy and short-term projects

Nov 2018 - Apr 2019 — Part time consultant on AUV propulsion (self employed)

- Established project plan and priorities within customer budget.
- Performed design analysis of ducted propulsion systems of two small AUV's.
- Proposed alternative designs to improve propulsion and help the vehicles meet target speeds.

Apr 2015 — Consultancy work for Longitude Engineering, Southampton

- Liaised with the client to come up with software requirements specification.
- Developed a bespoke numerical model in Simulink to describe manned submersible dynamics.
- Used the model to perform controllability analysis and suggested improvements to the design.

Internships

Jun - Sep 2013 — Summer Intern at CJR Propulsion Limited
72 Quayside Road, SO18 1AD, Southampton, UK

- Developed CFD simulations and data analysis scripts for ship flow applications.
- Engaged in mechanical design and gained experience in manufacturing (3D printing, casting, CNC).
- Carried out sea trials of a motor yacht to assess noise and vibration of its propeller.

Jun - Aug 2012 — Research Intern at University of Southampton
Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Performed a technological, economic, and regulatory feasibility study looking at suitability of small modular nuclear reactors (SMRs) for propulsion of commercial ships.
- Developed bespoke techno-economic evaluation tools (C++ and Matlab).

Key skills

Areas of specialisation and professional experience

- Expertise in development of scientific and engineering software for a wide variety of applications using multiple programming languages and operating systems with specialisation in Python & C++ on Linux.
- Comprehensive understanding of engineering principles related to all aspects of marine craft design with particular focus on unmanned underwater systems developed from work for the BRIDGES consortium.
- Deep understanding of marine hydrodynamics, with particular emphasis on performance prediction, hydroacoustics and ship wake flows obtained during PhD, employment, and part-time projects.

Job-related skills

- Problem solving skills in areas such as applied mathematics and physical system modelling derived from multiple projects centred around development of new models and methodologies.
- Understanding of autonomous robot design and operation with focus on underwater robotics developed during employment, attendance of conferences and training courses.
- Experience in development of physical models of dynamical systems, surface and underwater vehicles.
- Ability to design, build and utilise electro-mechanical systems obtained from work on custom dynamometry rigs, soft robotic actuators, and hobby robotics.
- Outstanding learning skills and ability to quickly adapt and cope with novel problems.

IT skills

- Rich background in data analytics with focus on using Python in order to assimilate various streams of data to inform decisions and support quantitative scientific conclusions.
- Proficient programming skills in Python, C/C++ and Fortran; rudimentary experience in MatLab.
- Experience of software development for Windows and Linux operating systems.
- Ability to carry out test-driven development of complex and constantly evolving software.
- Version control using git and SVN for individual and collaborative software projects.
- Experience in software development for Arduino, basic understanding of embedded programming and Robot Operating System (ROS).

Communication skills

- Effective written and oral communication developed through writing of journal articles, project reports, and attendance of conferences.
- Experience in conveying own knowledge through undergraduate teaching, guidance of students. through individual and group projects, supporting fellow researchers in using OpenFOAM CFD package.

Organisation and managerial skills

- Decision making and project management skills developed during tackling several parallel commitments with strict deadlines and commercial implications thereof.
- Ability to cooperate with and manage people developed during participating in several group projects, supervising intern and undergraduate project students, and acting as a sailing instructor.

Education

Oct 2013 - Jun 2017	PhD in Marine Hydrodynamics Fluid Structure Interaction Group, University of Southampton, United Kingdom
Oct 2009 - Jun 2013	MEng (Hons) Ship Science – Yacht & Small Craft, 1^{st} class University of Southampton, Southampton, United Kingdom

- Naval architecture course with selected modules focused on marine craft hydrodynamic design.
- BEng project looked at implementing fuzzy-adaptive genetic algorithms to aid in the selection of optimum yacht characteristics at the initial design stage (Matlab).
- MEng group project focused on the development of a real-time dynamic model of an America's Cup catamaran to be used for crew training (Simulink).

Relevant extracurricular experience

Oct 2014 - Jun 2015	Member of University of Southampton's team working on Global Marine Technology Trends (GMTT) 2030 report in collaboration with Lloyd's Register and QinetiQ
Nov 2013	Co-organiser and demonstrator at OpenFOAM workshop at Woods Hole Oceanographic Institution (WHOI)
Oct 2013 - Present	Supporting OpenFOAM knowledge-base of the research group through local workshops and individual engagement with fellow students and researchers
Oct 2013 - Sep 2018	Teaching and lab demonstrator at undergraduate modules - Ship Resistance and Propulsion, Renewable Energy from Environmental Flows, Offshore Engineering
Jun - Sept 2011	Voluntary deckhand and sailing instructor aboard sails training ship Fryderyk Chopin

Languages spoken

English - Professional (C2), Polish - Native, Dutch - Basic (B1) German - Basic (A1),

Other qualifications and relevant information

ISSA Leisure Yacht Skipper, RYA VHF radio operator, RYA First Aid Course, Padi Advanced Open Water Diver

Teaching experience

Oct 2017 - Sep 2019	Teaching assistant in Renewable Energy from Environmental Flows undergraduate module
Jun 2017 - Present	Published open-source training materials for OpenFOAM developers
Oct 2016 - Sep 2019	Co-organiser and demonstrator during towing tank experiments for undergraduate modules
Jan - Jun 2016	Co-supervisor of an undergraduate exchange student looking at numerical modelling of turbulent transition
Jan 2017 - Sep 2019	Support of several PhD students in terms of learning the OpenFOAM CFD toolbox and diagnosing problems in their simulations
Nov 2014	Demonstrator at an OpenFOAM workshop organised by the National Oceanographic Institution (NOC) and Woods Hole Oceanographic Institution (WHOI)
Oct 2013 - Sep 2019	Teaching assistant in Advances in Ship Resistance and Propulsion undergraduate module
Oct 2013 - Sep 2019	Teaching assistant in Advances in Ship Resistance and Propulsion undergraduate module