

# Artur K. Lidtke

## SUMMARY

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Self-motivated researcher with background in scientific software development, 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

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## WORK AND PROFESSIONAL EXPERIENCE

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### Employment

SEP 2018 - PRESENT SENIOR 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 automated test framework.
- Management of on-going research projects, identification of new opportunities and external funding.
- Supervision of PhD- and MSc-level students.
- Detailed validation of developed models and implementation of automated test suites.
- Data analysis and automation (Python, bash).
- Development and application of machine learning methods to fluid dynamic problems.

JAN 2016 - AUG 2018 RESEARCH FELLOW IN MARITIME ROBOTICS - EU BRIDGES CONSORTIUM

Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Hydrodynamic and mechanical design of two autonomous underwater gliders.
- Use of computational and experimental fluid dynamic analysis for performance evaluation of underwater vehicle hulls, rudders and thrusters.
- Leading the hydrodynamic design work package, liaising with industrial and academic partners, and establishing project timelines on sub-system level.
- Design, construction, and application of wind tunnel dynamometers for precision measurements.
- Development of software for propeller design, AUV mission simulation, and data analysis (Python).

OCT 2013 - JUN 2017 DOCTORAL RESEARCHER IN MARINE HYDRODYNAMICS

Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Development of acoustic tools (Ffowcs Williams-Hawkings analogy) and numerical models for cavitation prediction inside the OpenFOAM package (C++).
- Application of both methodologies to study the hydroacoustics of marine propellers and hydrofoils.
- Development of 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)

- Establishing project plans and priorities within customer budget.
- Design analysis of ducted propulsion systems of two small AUV's.
- Development of alternative designs to improve propulsion and help the vehicles meet target speeds.

APR 2015 Consultancy work for Longitude Engineering, Southampton

- Liaising with the client to come up with software requirements specification.
- Development of a bespoke numerical model in Simulink to describe manned submersible dynamics.
- Use of 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

- CFD simulations and data analysis for ship flow applications.
- Development of Python scripts for automated data analysis and improved design practices.

JUN - AUG 2012 RESEARCH INTERN AT UNIVERSITY OF SOUTHAMPTON

Fluid Structure Interaction Group, University of Southampton, United Kingdom

- Technological, economic, and regulatory feasibility study looking at suitability of small modular nuclear reactors (SMRs) for propulsion of commercial ships.
- Development of bespoke techno-economic evaluation tools (C++ and Matlab).
- Supplying materials to support a £10M grant application to the UK Government.

## KEY SKILLS

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### 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 & Fortran on Linux.
- Deep understanding of marine hydrodynamics, with particular emphasis on performance prediction, hydroacoustics and ship wake flows obtained during PhD, employment, and part-time projects.
- Putting specific knowledge and experience in a wider context to develop long-term research plans and engage potential industrial and academic collaborators.

### 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.
- Outstanding learning skills and ability to quickly adapt and cope with novel problems.
- Rich numerical modelling background with strong focus on marine CFD, particularly multiphase flows, turbulence and acoustics.
- Practical knowledge of common machine learning and reinforcement learning frameworks (scipy, pytorch, stable baselines).
- Ability to communicate with stakeholders, clients, and researchers in order to understand capability gaps in modelling tools and scope opportunities for future developments.

### 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.

### 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 CFD packages.

### Organisation and managerial skills

- Decision-making and project management skills developed during tackling several parallel commitments with strict deadlines and commercial implications.
- Ability to cooperate with and manage people developed through mentoring of junior colleagues, supervision of MSc and PhD students, and acting as a sailing instructor.

## EDUCATION

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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 <sup>st</sup> CLASS University of Southampton, Southampton, United Kingdom <ul style="list-style-type: none"><li>• Naval architecture course with selected modules focused on marine craft hydrodynamic design.</li><li>• BEng project looked at implementing fuzzy-adaptive genetic algorithms to aid in the selection of optimum yacht characteristics at the initial design stage (Matlab).</li><li>• 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).</li></ul>

## RELEVANT EXTRACURRICULAR EXPERIENCE

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DEC 2024 - PRESENT	Co-organiser of the Wageningen 2025 Workshop on CFD in Ship Hydrodynamics
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

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ENGLISH - Professional (C2), POLISH - Native, DUTCH - Fair (B2) GERMAN - Basic (A1),

## OTHER QUALIFICATIONS AND RELEVANT INFORMATION

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