Yaolin Ge

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Summary

- Ph.D. candidate working on intelligent ocean autonomy project at NTNU.
- Experience with machine learning software system development and robotic operations.
- Practice data analytics and agile development in a daily routine.

Experience

Norwegian University of Science and Technology **Trondheim, Norway**
Ph.D. candidate, Dept. Mathematical Sciences Aug. 2020 – present

- Designed and implemented multi-scale machine learning software systems for autonomous underwater vehicles for intelligent ocean sampling purposes using advanced path planning algorithms.
- Deployed and integrated the systems onboard unmanned underwater robots for several successful field experiments in Trondheimsfjorden, Norway, and the Atlantic Ocean.
- Collaborate and communicate closely with multiple customers including SINTEF Ocean, AURLab NTNU, LSTS, and MARETEC for knowledge dissemination to foster novel ideas.
- Document and publish the results to relevant stakeholders and clients and share knowledge with the public. Three papers were accomplished.

Peking University **Beijing, China**
Summer research student at AI+Art Lab, PKU Jul. 2019 – Aug. 2019

- Studied machine learning and deep learning principles, particularly computer vision techniques.
- Applied and integrated motion-capturing algorithms *OpenPose* onboard a humanoid robot. [video]
- Demonstrated the performance of the algorithms with a robot dance show. [video]

Education

Norwegian University of Science and Technology **Trondheim, Norway**
Ph.D. candidate in the statistics group, Dept. Mathematical Sciences Aug. 2020 – present (expected Aug. 2023)
Thesis project: Developing multi-scale machine learning software systems for data analytics purposes to boost the autonomy of robotic oceanographic sampling.

KTH Royal Institute of Technology **Stockholm, Sweden**
MSc, Maritime Engineering, G.P.A. 4.625/5.00 Aug. 2019 – Jul. 2020
Thesis project: Developed an embedded software system to estimate and predict the location of robots.

Norwegian University of Science and Technology **Trondheim, Norway**
MSc, Marine Technology, G.P.A. 3.93/4.00 Aug. 2018 – Jun. 2019
Relevant project: Developed numerical prediction system for the lifting forces of a propeller.

University of Strathclyde **Glasgow, United Kingdom**
International Student Exchange Program, G.P.A. 3.85/4.00 Sept. 2017 – Jan. 2018
Relevant project: Analyzed structural static and dynamic behavior using the finite element method.

Jiangsu University of Science and Technology **Zhenjiang, China**
BSc, Naval Architecture and Ocean Engineering, G.P.A. 3.89/4.00**,** Rank: 2/230 Sept. 2014 – Jun. 2018
Thesis project: Analyzed the results of a numerical solver to study the effect of Vortex-Induced-Vibration on slender body structures such as a steel catenary riser (SCR) in the deep sea.
Awards: National Scholarship (top 1%), First prize in Academic Competition in Mechanics knowledge,

Skills & Interests

Programming: Python, Git, C/C++, Bash scripting, Matlab, SQL, ROS, R, Julia
Frameworks: Numpy, Pandas, Scipy, Matplotlib, Plotly, CUDA
Software: PyCharm, QGIS, Microsoft Office365, Anaconda, VS Code, Adobe Photoshop/Illustrator
Language: English (full professional), Norwegian (conversational), Mandarin (native)
Interests: Outdoor life (sailing, camping, skiing ...), Taekwondo, Dance, Music, Travelling

Awards & Competitions

2021	Taekwondo WT – NM 2021, 3rd in KAMP, 4th in Poomsae, Norway
2019	Best Popular Prize, AI + Art in Robot Dancing Competition, PKU, China
2017	Merit Student, MOE, China
2017	First Prize, Academic Competition in Mechanics Knowledge, JUST, China
2016 – 2017	National Scholarship, MOE, China

Extra-curricular

Taekwondo instructor Trondheim, Norway
NTNUI Taekwondo Jan. 2020 – present

- I am a Taekwondo instructor who plans and adapts training for all members.
- Competed in the Norwegian Championships in 2021, won 1 bronze medal in combat senior M 74+.

Salsa line instructor Trondheim, Norway
NTNUI Dans Sept. 2021 – present

- I am involved in the organization of the weekly dance classes.

Courses & Certificates

Deep Learning Specialization acquired: 15th April 2020, Coursera
This is offered by deeplearning.ai, covers basic and advanced topics in deep learning with practical programming tasks, which enable me to build deep learning models and solve real-world problems.

Fundamentals of Accelerated Computing with CUDA Python acquired: 20th-April-2022, NVIDIA
I have learned about how to speed up the calculation using GPU programs using CUDA.

CS50 acquired: 26th-March-2023, Harvard University
CS50 is an introductory computer science course taught at Harvard University that covers fundamental concepts in programming, algorithms, data structures, and web development.

Reference

Jo Eidsvik	Dept. of Mathematical Sciences, NTNU	
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Publication

[1] **Yaolin Ge**, André Julius Hovd Olaisen, Jo Eidsvik, R. Praveen Jain, and Tor Arne Johansen. Long-horizon informative path planning with obstacles and time constraints. IFAC-PapersOnLine, 55(31):124–129, 2022. 14th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles CAMS 2022.

[2] **Yaolin Ge**, Jo Eidsvik, Tore Mo-Bjørkelund. 3D Adaptive AUV Sampling for the Classification of Water Masses. IEEE Journal of Oceanic Engineering, 2023. [accepted and underproduction]

[3] **Yaolin Ge**, Jo Eidsvik, André Julius Hovd Olaisen. Robotic exploration of a river plume system using a flexible cost valley concept. Field Robotics, 2023. [submitted and under review]