**Yaolin Ge**

Teknikringen 8, 11428, Stockholm, Sweden | +46 073 095 8626 | [yaolin@kth.se](mailto:yaolin@kth.se)

**SUMMARY**

*MSc. Student majoring in underwater engineering (N5T), with a strong aspiration in artificial intelligent underwater autonomous systems, specialising in sonar signal processing and underwater robotics.*

**EDUCATION**

**KTH Royal Institute of Technology Stockholm, Sweden**

*MSc, Maritime Engineering* Expected Jun 2020

*Thesis: Signal Processing of Underwater Beacons for AUVs*

*Core courses: Applied Programming and Computer Science; Digital Signal Processing; Underwater Technology*

**Peking University Beijing, China**

*Summer Research Student, Deep Learning and Robotic Dancing* Jul. 2019 – Aug. 2018

*Competition: Mapping the Human Motion to Dancing Robotics using OpenPose in OpenCV DNN module*

**Norwegian University of Science and Technology Trondheim, Norway**

*MSc, Marine Technology,* G.P.A. 3.93/4.00 Aug. 2018 – Jun. 2019

*Coursework: Underwater navigation and positioning; Seabed mapping; Underwater acoustics and optics*

**University of Strathclyde Glasgow, United Kingdom**

*International Student Exchange Program,* G.P.A. 3.85/4.00Sept. 2017 – Jan. 2018

**Jiangsu University of Science and Technology Zhenjiang, China**

*BSc, Ocean Engineering,* G.P.A. 3.89/4.00**,** Rank: 2/230Sept. 2014 – Jun. 2018

*Awards: National Scholarship (Top 1%) 2016; Undergraduate IoT Research Fellowship*

**RESEARCH EXPERIENCE**

**KTH & Swedish Maritime Robotics Centre (SMaRC) Stockholm, Sweden**

*Sonar Signal Processsing MSc Graduate*Jan. 2020 – present

* Investigated the common navigation system for underwater vehicles such as LBL, USBL, SBL, INS etc.
* Implemented the advanced estimation algorithms such as EKF, UKF, CMF & QMF for active sonar detection and range estimation purposes, together using CA-CFAR and OS-CFAR to maintain constant false-alarm-rate
* Developed the underwater acoustic signal processing algorithms for range estimation subject to doppler effect
* Planned to conduct field trips to evaluate the performance of the acoustic beacon system at Askö waters

*Supervisors: Peter Sigray, Professor; Martin Ludvigsen, Professor*

**KTH & Swedish Maritime Robotics Centre (SMaRC) Stockholm, Sweden**

*SD2709 Underwater Robotic Design Project* Sept. 2019 – Dec. 2019

* Designed a new concept of the next generation flexible underwater robotics for seabed survey and IMR
* Simulated the trajectory path manoeuvring and navigation using PID controller together with Kalman filter
* Conducted the hardware-in-the-loop testing for motion control such as propeller speed control etc.

*Supervisors: Ivan Stenius, Associate Professor*

**NTNU & Applied Underwater Robotic Laboratory (AURLab)** **Trondheim, Norway**

*Seabed Survey Research Student* Jan. 2019 – Jun. 2019

* Studied the seabed sensing survey equipment, such as LAUV Fridtjøf with sensors like SSS, MBES, CTD profiler, SBPs, FLS, Acoustic Modems, DVL, Camera etc.
* Planned the preliminary underwater survey paths such as YoYo / See-Saw patterns considering the bathymetry & topology of the seabed
* Conducted the field trip on board R/V Gunnerus at Skøgen to collect MBES data and SSS data, and applied TVG and photo-mosaic algorithms to extract and patch the seabed acoustic images for further research

*Supervisor: Martin Ludvigsen, Professor*

**SKILLS & INTERESTS**

**Programming:** C/C++, Python, MATLAB, ROS

**Language:** Chinese (native), English (full professional)

**Interests:** Running, cycling, cross-country skiing, artificial intelligence

**AWARDS**

2019 Intel® Edge AI Scholarship, Intel

2019 Best Popular Prize, AI + Art in Robot Dancing Competition, PKU

2017 Merit Student, MOE

2016 – 2017 National Scholarship, MOE

2015 National Encouragement Scholarship, MOE

**PROFESSINOAL MEMBERSHIPS**

*IEEE Membership (Student)*

*IEEE Robotics and Automation Society Membership*

**EXTRA-CURRICULAR**

**Deep Learning & TensorFlow Graduate Coursera**

* Studied common computer vision CNN models such as LeNet-5, AlexNet, VGG, ResNet etc.
* Trained a DNN model for computer vision applications using fashion MNIST dataset
* Employed the CNN model using TensorFlow Keras module for more complex image classification and object detection purposes
* Applied more advanced algorithms such as YOLO algorithm for car detections and Siamese network for face recognition

**SLAM, Simultaneous Localization and Mapping Workshop CEU, IEEE**

* Studied the SLAM principles and uncertainty models such as Uni-Modal, Multi-Hypotheses, Grid Tessellation, and Topological
* Simulated the hybrid SLAM using both Kalman filters and Particle filters

**Sensor Fusion NanoDegree Graduate Udacity**

* Applied Ransac and KD-Tree based Euclidean clustering algorithms for detection and tracking of autonomous vehicles using Lidar data
* Studied and applied radar principles for range-doppler estimation and implemented CFAR techniques to remove the clutter noises and generated RDM (Range Doppler Map)
* Investigated other common sensors for machine perception such as Camera etc.
* Worked with simulators to merge all sensing data

**Peking University Beijing, China**

**Summer campus program in Robotic Dancing, PKU** Jul. 2019 – Aug. 2019

* Studied the deep learning principles and investigated OpenPose algorithm
* Conducted the motion capture technique for the robotics and converted the 2D motion to 3D skeletons for further mapping to robotic motion
* Programmed Yanshee Robot to dance following human motions

**REFEREES:**

Hedvig Kjellström Dept. of Intelligent Systems, KTH

Professor [hedvig@kth.se](mailto:hedvig@kth.se) +46 8 790 69 06

Ivan Stenius Dept. of Aeronautics and Vehicle Engineering, KTH

Associate Professor [stenius@kth.se](mailto:stenius@kth.se) +46 70 288 82 63

Martin Ludvigsen Dept. of Marine Technology, NTNU

Professor [martin.ludvigsen@ntnu.no](mailto:martin.ludvigsen@ntnu.no) +47 91897272