

Jonatan Scharff Willners

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My doctoral studies focused on cooperative behaviours and use cases between autonomous vehicles in the maritime domain. The primary focus being path planning for surface vehicles in order to improve the usage of Autonomous Underwater Vehicles (AUVs) by supporting through acoustic localisation messages. My research interests include path planning, navigation and localisation, marine robotics, autonomous behaviour and vehicle design.

Current Occupation

- **Heriot-Watt University** **2020-Present**
Edinburgh, UK
○ *Research Associate*
Autonomy for marine vehicles for inspection of offshore structures.

Education

- **Doctor of Philosophy** **2016-2020**
Edinburgh, UK
○ *Heriot-Watt University, SeeByte Ltd.*
Thesis title: Cooperative navigation between surface and sub-surface vehicles.
- **Master of Science in Engineering in Robotics** **2010-2015**
Västerås, Sweden
○ *Mälardalens University*
Thesis title: Body area network for gait symmetry analyses.

Other Experiences.....

- **Visiting Researcher:** Spent half a year at Australian Centre for Field Robotics as a visiting researcher.
- **Naiad:** Team leader for the software team that built an Autonomous Underwater Vehicle which went on to compete in Robosub San Diego, 2015.
- **Supervising:** Assisting in the supervision of Undergraduate and Masters students during my PhD
- **Marketing:** Representing universities (Ocean Systems Laboratory/Heriot-Watt University and Mälardalens University) at different fairs.

Employment History

- **SeeByte Ltd.** **2019**
Edinburgh, UK
○ *Path planning developer*
Implementing path planning algorithms for autonomous marine vehicles.
- **Combitech AB, SAAB Dynamics AB** **2015-2016**
Linköping, Sweden
○ *Consultant*
SAAB dynamics computer vision/image processing department.
- **Smartstudies** **2014-2015**
Västerås, Sweden
○ *Private Tutor, Mathematic and physics*
- **Mälardalens högskola** **2013-2014**
Västerås, Sweden
○ *Lecturer's Assistant*
Supervising experiments for students and giving lectures.

- **ABB Robotics**
 - *System Tester*
Verification of industrial robots.

2011
Västerås, Sweden

Technical and Personal skills

Technical Skills.....

- **Programming Languages:** Python, C/C++, Matlab, Ada
- **Other Software Skills:** SolidWorks, OpenCV, ROS, Linux, Arduino, L^AT_EX, Docker, Adobe Illustrator

Languages.....

- **Swedish** Native
- **English** Fluent
- **Danish** Intermediate
- **Spanish** Beginner

Other.....

- **Drivers licence** since 2010

Publications

- **Online 3-Dimensional Path Planning with Kinematic Constraints in Unknown Environments Using Hybrid A* with Tree Pruning** 'Scharff Willners, J.; Gonzalez-Adell, D.; Hernández, J.D.; Pairet, È.; Petillot, Y', Sensors, 2021.
- **Sampling-Based Path Planning for Cooperative Autonomous Maritime Vehicles to Reduce Uncertainty in Range-Only Localisation** 'Jonatan Scharff Willners, Lachlan Toohey, Yvan R. Petillot', IEEE RA-Letter/IROS, Macau, China, 2019.
- **Exploring Interaction with Remote Autonomous Systems using Conversational Agents** 'David A. Robb, J. Lopes, S. Padilla, A. Laskov, F. Garcia, X. Liu, Jonatan Scharff Willners, N. Valeyrie, K. Lohan, D. Lane, P. Patron, Y. Petillot, M. Chantler, H. Hastie', ACM conference on Designing Interactive Systems, San Diego, USA, 2019.
- **Reducing Uncertainty From Range-Only Localisation by Transmission at Optimal Time** 'Jonatan Scharff Willners, Lachlan Toohey, Yvan R. Petillot', OCEANS Marseille, France, 2019.
- **A Natural Language Interface and Relayed Acoustic Communications for Improved Command and Control of AUVs** 'D. A. Robb, Jonatan Scharff Willners, N. Valeyrie, F. J. C. Garcia, A. Laskov, X. Liuy, P. Patron, H. Hastie and Y. Petillot', Autonomous Underwater Vehicle, Porto, Portugal, 2018.
- **Autonomous Kinodynamic Path Planning for Following and Tracking Vehicles** 'Jonatan Scharff Willners, Pedro Patron, Yvan R. Petillot, Daniel González-adell', OCEANS Charleston, 2018.
- **Moving Baseline Localization for Multi-Vehicle Maritime Operations** 'Jonatan Scharff Willners, Pedro Patron, Yvan R. Petillot', OCEANS Aberdeen, 2017
- **Intelligent Wireless Body Area Network System for Human Motion Analysis** 'Per Anders, Rickard Hellstrom, Lennie Carlén Eriksson, Jonatan Scharff Willners, Mia Folke, Martin Ekström', IARIA Brussels 2015

References

Prof Yvan Petillot: y.r.petillot@hw.ac.uk, PhD Supervisor
Dr Andrea Munafo: andrea.munafo@seebyte.com