

Ph.D. & Post-Doctoral Fellowship Programme

# **H2020 BUGWRIGHT2\*: Overcoming Regulatory Barriers For Service Robotics in an Ocean Industry Context**

Terms of Reference 2019



*The World Maritime University-Sasakawa Global Ocean Institute introduces:*

Ph.D. and Post-Doctoral Fellowship Programme supporting: **H2020**  
**BUGWRIGHT2\*: Overcoming Regulatory Barriers For Service**  
**Robotics in an Ocean Industry Context**

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Scientists have defined robots as autonomous systems that exist in the physical world. Currently, this physical world is witnessing an era of digital advancement in which the robotic industry is one of the fastest growing markets. This advancement is marked by the emergence of autonomous technology and service robotics systems. In this continuum of technology development, service robots have reached a stage where they can achieve desired goals.

In the blue economy sectors, this form of autonomy has gained momentum and widespread attention in the regulatory and policy communities due to its potential to deliver reduced fuel consumption, less emissions and increased operational profits for highly competitive industries. However, the current regulatory framework was not designed to take into account the use of robotics for inspection and control, compliance and enforcement, along with climate mitigation and labour market related purposes.

There is thus a need for fundamental review and reform of the international, European Union and national legislative framework under which robotics operate including revisiting international laws and relevant European Union (EU) instruments to unleash its full potential.

Apart from the intellectual property law aspects of new technologies that needs careful review, one of the key issues in the maritime domain concerns the use of robotics for various purposes in the shipping and associated industries, including the certification standards and regulations that ought to be applied at the international, European Union level and national levels. In addition, robotics and associated technologies have vital regulatory applications in the context of inspection and control, enforcement and compliance, as well as in meeting requirements under environmental, climate and shipping regulation.



Funded by the Horizon 2020  
Framework Programme of the  
European Union



A novel aspect of applying autonomous robotics relates to the task of visual inspection and hull cleaning along with the climate change mitigation benefits derived from cleaner hulls. This in turn can contribute to the attainment of specific targets under Goals 13 and 14 of the UN 2030 Agenda for Sustainable Development. There is also significant labour law and market considerations that must be taken into account in relation to the automation of traditional industries.

In furtherance of the foregoing, the WMU-Sasakawa Global Ocean Institute has partnered the DREAM (Data-driven Robotics for Environment Assessment and Monitoring) Lab at the French campus of the Georgia Institute of Technology, as well as academic, classification society and industry partners in European Union's H2020 BUGWRIGHT2\* Project.

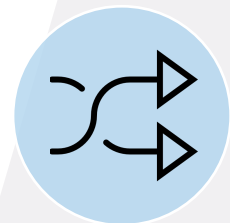


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The World Maritime University is offering a Ph.D. and a PostDoctoral position Fellowship Programme (Programme) to support the project team with a particular focus on overcoming regulatory barriers and societal challenges. The programme aims to examine possible regulatory dimensions in relation to autonomous robots deployed in the ocean shipping domain. The main objective of this programme is to identify and address all existing regulatory barriers through interdisciplinary research that takes into account the progressive developments at the international, regional and national levels with a view to establishing the vital regulatory applications in the context of inspection, cleaning and control, enforcement and compliance under environmental, climate and shipping regulation.

Against this background, Ph.D. and Postdoctoral scholarship research proposals are welcome canvassing novel policy and scientific approaches in within *robotics and artificial intelligence* across the following thematic areas:

1. Interdisciplinary analysis of existing **international legal norms and standards** in relation to maritime robo-technology under environmental, climate and shipping regulatory regimes and application of those norms in **national laws** related to maritime service robots;
2. Exploring innovative ways forward to unleash the full potential of **EU regulatory applications and harmonize rules** pertaining to maritime service robots in the context of inspection, cleaning and control, enforcement and compliance; or
3. Interdisciplinary analysis of **EU intellectual property laws & certification** processes in relation to maritime service robots in the context of inspection, cleaning and control, enforcement and compliance.





**The successful applicants are required to incorporate innovative components and/or techniques to address complex challenges relevant to the research theme, as well as have an interest in remote sensing technologies, data acquisition and data synthesis as they apply to the marine environment. The innovative components and/or techniques should be guided by sound research methodology or a combination of research methodologies and challenge-led interdisciplinary research approaches. The research elements of the proposals shall engage with one or more of the following:**

1. International agreements, including the United Nations Convention on the Law of the Sea, the UN Framework Convention on Climate Change, and the Paris Agreement; the International Maritime Organization (IMO) treaty regime related to safety, efficiency and the environmental control of pollution; intellectual property rights further to World Intellectual Property Organization (WIPO) and related standards; along with the certification requirements and standards pursuant to the International Organisation for Standardization (ISO) framework;
2. Concrete actions at the EU level including: The European Parliament's Resolution on Civil Law Rules on Robotics (Feb 16th, 2017); The European Commission's Communication on AI for Europe (April 25th, 2018); The European Parliament's Resolution on a comprehensive European industrial policy on AI and robotics (February 12th, 2019); and The European Commission's Communication on Building Trust in Human-Centric AI (April 8th 2019)
3. Ongoing programmes of international, EU and national regulatory bodies and certification agencies (RINA, Bureau Veritas, Lloyds Register of Shipping, American Bureau of Shipping, China Classification Society, etc.);
4. EU single digital market and General Purpose Technology (GPT);
5. Ongoing efforts of the work of the *European Group on Ethics in Science and New Technologies*;
6. Relevant cooperation programmes and initiatives implemented by the European Maritime Safety Agency; and
7. Comparative study of the regulation of maritime service robots in the United States, the Netherlands, Canada, Norway, China and Singapore.

The successful applicants are required to be resident at WMU in Malmö, Sweden, for the duration of the programme. The successful applicants shall be under an obligation to conduct research at the GOI with the support of WMU faculty and staff.

The PhD scholarship covers tuition fees and an annual stipend of approximately 180,000 SEK to cover living and related expenses. The PhD scholarship is awarded for a maximum period of three years from the date of registration.

*The Post-Doctoral fellowships provide for an annual stipend of approximately 412,000 SEK and will be awarded for a maximum period of two years.*

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## Further information:

Further information regarding the Programme can be obtained through informal communication with Professor Ronán Long, Director and Professor Clive Schofield, Head of Research at the WMU-Sasakawa Global Ocean Institute by contacting **Ms. Jill Jarnsäter**, Secretary at the WMU-Sasakawa Global Ocean Institute at: [goisecretariat@wmu.se](mailto:goisecretariat@wmu.se)

Kindly see application procedure and deadline on the following page.





# Ph.D. Fellowship Application

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## Eligibility and Conditions for the PhD scholarship

1. Applicants should have a Masters degree in the field of
  - A. *Patent and Intellectual Property Law;*
  - B. *Information Technology and Industrial Robotics Law;*
  - C. *European Union Law with a focus on Regulatory Standards and Certification;*
  - D. *International & Comparative Law pertaining to Norms, Standards and Certification*

**OR**

  - E. *Engineering / Computer Science / Information Technology*
2. The applicants should have experience in Robotics and autonomous systems.
3. Language proficiency in English is essential. Applicants must offer one of the following tests as proof of competence in the English language:
  - A. *Test of English as a foreign language (TOEFL): 96+ (internet-based test), 590+ (paper based test)*
  - B. *International English Language Testing System (IELTS): band 7.0 or above*
  - C. *Cambridge Examinations: Cambridge Proficiency Examination at grade A or B*
  - D. *GCE O-level or equivalent: a good pass grade.*

## Notes

Candidates with academic and professional experience of the conduct of ocean-robotics and technology-policy interface would be advantageous.

WMU seeks to increase the number of women at all levels and, therefore, qualified women are particularly encouraged to apply. Applicants especially from developing countries and least developed countries are strongly encouraged to apply.

## Ph.D. - How to Apply:

Applicants must apply through the WMU's online portal at <https://www.wmu.se/phd/apply> and click "Apply now" and click on to the **Maritime Affairs (PHD)** (on the 2nd page of the portal).

The applicant will need to submit the following documents in connection with their application to the doctoral programme of this scholarship\*:

1. **WMU Ph.D. Application Form;**
2. Complete the **WMU Ph.D. Research Proposal**\*\* along with the application for admission;
3. A **one-page motivational letter**, subject line of *PhD Scholarship Application: H2020 BUGWRIGHT2\*: Overcoming Regulatory Barriers For Service Robotics in an Ocean Industry Context*
4. Updated Curriculum Vitae (CV);
5. Certified copies of degree certificates and transcripts;
6. Copy of English language proficiency certification or equivalent proof;
7. Copy of passport (data page, only for internal record).

**In addition, to complete the application, the applicant must inform referees to:**

- Send **2 Letters of academic reference** to be sent directly by your referees to the Doctoral Office, email [phd@wmu.se](mailto:phd@wmu.se) and copy to [goisecretariat@wmu.se](mailto:goisecretariat@wmu.se)

**Deadline:** Application cut-off dates for applying to this PhD programme is: **31 January 2019, 23:59 CET.**

Applications for admission will be considered by WMU's Doctoral Admissions Board. The Admissions Board will select only the best-qualified candidates taking into account their research proposal as well as all their qualifications and achievements.

*Only shortlisted candidates will be contacted for next steps.*

\* All necessary forms can be downloaded at <http://www.wmu.se/phd/apply> and **application should be submitted online.**

\*\* All applicants must submit a research proposal that clearly indicates the area in which their research will be conducted, including the key issues to be examined in detail. The research proposal should identify an original research question, and demonstrate that the applicant understand what research at the postgraduate level entails. The quality of the research proposal is extremely important. It is a crucial part of the application and will be used to match prospective candidates with research supervisors





# Post-Doctoral Fellowship Application

## Eligibility and Conditions for the Post-Doc fellowship:

1. The applicants must have qualifications and experience in Patent and Intellectual Property Law in the European Union;
2. The applicants should have a relevant doctoral degree, for example in any of the following fields:
  - A. *Patent and Intellectual Property Law;*
  - B. *Information Technology and Industrial Robotics Law;*
  - C. *European Union Law with a focus on Regulatory Standards and Certification;*
  - D. *International & Comparative Law pertaining to Norms, Standards and Certification*

**OR**

  - E. *Engineering / Computer Science / Information Technology*
3. Language proficiency in English is essential. Applicants must offer one of the following tests as proof of competence in the English language:
  - A. *Test of English as a foreign language (TOEFL): 96+ (internet-based test), 590+ (paper based test)*
  - B. *International English Language Testing System (IELTS): band 7.0 or above*
  - C. *Cambridge Examinations: Cambridge Proficiency Examination at grade A or B*
  - D. *Or other equivalent quality proof of competence.*

## Notes:

Candidates with academic and professional experience of the conduct of ocean-robotics and technology-policy interface would be advantageous.

WMU seeks to increase the number of women at all levels and, therefore, qualified women are particularly encouraged to apply. Applicants especially from developing countries and least developed countries are strongly encouraged to apply.



## Post Doc - How to apply:

Applicants must apply by sending their complete application including all documentation to Head of Human Resources Mr. Marco Batista on [mb@wmu.se](mailto:mb@wmu.se) with copy to [goisecretariat@wmu.se](mailto:goisecretariat@wmu.se). Further information on the fellowship post is available on <http://www.wmu.se/vacancies>.

Following documentation shall be submitted via email with subject line **Post-Doc Fellowship Application: H2020 BUGWRIGHT2\*: Overcoming Regulatory Barriers For Service Robotics in an Ocean Industry**

1. Updated CV and UN Personal History form P11
2. A one-page research proposal
3. A one-page Motivational Letter
4. Certified copies of degree certificates and transcripts
5. Copy of English language proficiency certification
6. Copy of passport (data page, only for internal record)
7. Two Academic Letters of Reference

**Deadline:** Application cut-off dates for applying to this Post Doctoral fellowship is: **31 January 2019, 23:59 CET.**

Applications for admission will be considered by a selection board that will select only the best-qualified candidates taking into account their research proposal as well as all their qualifications and achievements relevant for the fellowship.

*Only shortlisted candidates will be contacted for next steps.*





