RESEARCH SCHOLARSHIP OPPORTUNITY

Position reference number	NPO1-DR1	Deadline for application	20/12/2024

Institution	Universidade de São Paulo, Escola Politécnica
Department	Mechatronics and Mechanical Systems Engineering
Supervisor	Prof. DR. Gilberto Francisco martha de Souza

Funding source	FAPESP	Type	PhD candidate (DO)
Duration (months)	36	Hours/week	40
Monthly stipend	R$ 5.520,00 (BRL Brazilian Reais)		
Workplace	Escola Politécnica, Universidade de São Paulo, Av. Prof Melo Moraes 2231, Cidade Universitária, São Paulo SP, Brasil		
Planned start date	February 2025		

Project title Reliability and risk analysis via SysML and Petri nets for hydrogen carrier substances (NH3) production and transportation	**Título do projeto** Confiabilidade e análise de risco via redes SysML e Petri para sistema de produção e transporte de substâncias transportadoras de hidrogênio (NH3)
Research theme The objective of this research is to explore the ability of SysML to store information about a system to perform risk and reliability analysis along with Petri nets. Such analysis are essential for a complete understanding of the functioning of a given system, as well as a broad understanding of the causes and consequences of possible failures that they present. By combining knowledge management techniques, such as Systems Modeling Language (SysML) and mathematical tools used in reliability and risk analyses, such as Petri nets, it will be possible to optimize the results of such analyses.	**Tema de pesquisa** O objetivo desta pesquisa é explorar a capacidade do SysML de armazenar informações sobre um sistema para realizar análises de risco e confiabilidade juntamente com redes de Petri. Tais análises são essenciais para uma compreensão completa do funcionamento de um determinado sistema, bem como uma compreensão ampla das causas e consequências de possíveis falhas que estes apresentam. Ao combinar técnicas de gestão do conhecimento, como Systems Modeling Language (SysML) e ferramentas matemáticas utilizadas em análises de confiabilidade e risco, como redes de Petri, será possível otimizar os resultados dessas análises.
Project abstract Although there are several techniques used to perform reliability and risk analyses, the	**Resumo do projeto** Embora existam diversas técnicas utilizadas para realizar análises de confiabilidade e risco, a

quality of the results obtained is highly dependent on the knowledge of the specialists who perform them. Furthermore, with the increasing complexity of offshore systems, the amount of information needed to implement such analyses is increasing. That's why techniques that allow the management of systems knowledge to be more formalized, structured, and rigorous can help in the development and analysis of complex systems.	qualidade dos resultados obtidos depende muito do conhecimento dos especialistas que executá-los. Além disso, com a crescente complexidade dos sistemas offshore, a a quantidade de informações necessárias para implementar tais análises está aumentando. É por isso técnicas que permitem que a gestão do conhecimento de sistemas seja mais formalizada, estruturado e rigoroso pode auxiliar no desenvolvimento e análise de sistemas complexos.

Requirements for the candidate	Requisitos para o candidato
Master in Egineering or Physics	Mestrado em Engenharia ou Física

NOTES
- This research scholarship is offered by the OTIC – Offshore Technology Innovation Centre, a research center based at the University of São Paulo, Brazil.
- The scholarship will cover a standard monthly stipend determined by the funding agencies.
- Foreign candidates must fulfill the immigration requirements and obtain the necessary visas to work as researchers in Brazil. (Help will be offered to the selected candidate.)
- After the application process, potential candidates will be invited for personal or remote interviews.

REQUIRED DOCUMENTS FOR APPLICATION
- Single-page presentation letter. Introduce yourself and share your motivations for applying for this position.
- Brief curriculum vitae with academic and professional experience, highlighting the skills that will contribute to this position.
- Recommendation letters (optional). One or two recommendation letters will help support your application.

APPLICATION PROCESS
- Prepare an e-mail to otic.jobs@usp.br.
- Add "Application to [POSITION_REF_NUMBER]" to the subject.
- Gather all required documents above and attach them in PDF format.
- Send your application before the deadline above.

If you have any questions, please write to otic.jobs@usp.br.