



RESEARCH SCHOLARSHIP OPPORTUNITY

Position reference number	NPO6_DR1	Deadline for application	December 10 th , 2024
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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	December 2024		

Project title Development and Application of a Machine-Learning-Methods based Framework for Fault Detection, Diagnosis, Prognosis, and Risk Assessment of Subsea Equipment	Título do projeto Desenvolvimento e aplicação de um procedimento baseado em métodos de aprendizado de máquina para detecção de falhas, diagnóstico, prognóstico e avaliação de riscos de equipamentos submarinos
Research theme This research involves the application or reliability concepts coupled with artificial intelligence methods to detect the degradation in pieces of equipment. The degradation process is defined based on monitoring signals analysis and the importance as for equipment performance is based on reliability analysis. Based on degradation index the remaining useful life must be evaluated to support maintenance planning.	Tema de pesquisa Esta pesquisa envolve a aplicação de conceitos de confiabilidade aliados a métodos de inteligência artificial para detectar a degradação em equipamentos. O processo de degradação é definido com base na análise dos sinais de monitoramento e a importância para o desempenho do equipamento é baseada na análise de confiabilidade. Com base no índice de degradação a vida útil restante deve ser avaliada para apoiar o planejamento da manutenção.
Project abstract Develop a machine learning method for fault detection and diagnosis for subsea equipment from a framework that incorporates detection, diagnosis, prognosis, and risk assessment techniques and, at the same time, allows the assessment of a potential failure not only from its detection, diagnosis, and	Resumo do projeto Desenvolver um método de aprendizado de máquina para detecção e diagnóstico de falhas em equipamentos submarinos a partir de uma estrutura que incorpore técnicas de detecção, diagnóstico, prognóstico e avaliação de risco e, ao mesmo tempo, permita a avaliação de uma falha potencial não apenas a partir

occurrence probability in a given time interval, as well as the level of risk associated with its evolution over time.	de sua detecção, diagnóstico, e probabilidade de ocorrência num determinado intervalo de tempo, bem como o nível de risco associado à sua evolução ao longo do tempo.
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Requirements for the candidate MSc. in Physics or Master of Engineering Degree	Requisitos para o candidato Mestrado em Física ou Engenharia
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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 gfmsouza@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 gfmsouza@usp.br.