



SUPERVISOR INFORMATION	
First and Last name	Sérgio Pereira
URL of supervisor webpage	<a href="https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=469588">https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=469588</a>
Department	Department of Civil and Georesources Engineering
Field(s) of research	Structural Health Monitoring; Operational Modal Analysis; Anomaly Detection; Machine Learning
PROJECT PROPOSAL	
Title (optional)	LION – machine Learning for anomaly detectIOn
Brief project description	
<p>The main goal of this project is to develop advanced machine learning-based models for anomaly detection especially adapted for the continuous vibration-based monitoring of structures. To achieve this goal, the research will be based on the development, implementation, validation and optimization of tools for automated operational modal analysis (AOMA), data normalization and anomaly detection, supported by field data from the continuous dynamic monitoring of civil engineering structures. The main tasks include:</p> <ol style="list-style-type: none"> <li>1) Development of machine learning-based clustering tools for robust automated operational modal analysis;</li> <li>2) Data normalization models for the generation of novelty-sensitive features;</li> <li>3) Anomaly detection and localization applied to structural monitoring.</li> </ol> <p>Additional info: “LION” has a structural perspective supported by a strong data science component, and it lies within the scope of project “anoMaLy - Machine Learning-based Models for Advanced Anomaly Detection in Dam Structural Health Monitoring”, which has been recently funded by the Portuguese Foundation for Science and Technology (FCT). The analyses may use experimental data from dams, bridges or wind turbines.</p>	