



SUPERVISOR INFORMATION	
First and Last name	Armando Sousa
URL of supervisor webpage	https://fe.up.pt/asousa
Department	DEEC
Field(s) of research	Robotics + AI
PROJECT PROPOSAL	
Title (optional)	Query directed, AI-based, robotic perception system for long term robotic autonomy
Brief project description	
<p>Long term autonomy in robotics is still a challenge.</p> <p>Recent advances in AI offer great promise to improve perception and deal with data coming from several sources and diverse AI-based processing algorithms (foundational models, LLMs, VLMs, etc). Such perceptions are abundant and of multimodal nature but also likely unreliable – data might be incomplete, obsolete, partially contradictory, hallucinated, etc. The challenge is even larger robotic missions that likely have limited preparation data, abundant run time data (RGBD, radar, etc) and where there are consequences for wrong decisions.</p> <p>The proposed research line aims to research a new generation of perception systems that answers to multi modal queries thus generating meaningful perceptions, even in long robotic missions.</p> <p>At the time of this proposal, Gemini 2.0 is very recent and tools of such kind offer new possibilities in the area of robotic perception possibly allowing long term autonomy, task driven perception and contextual reasoning.</p> <p>Please contact the proponent asousa@fe.up.pt for more details.</p>	