

AEROSPACE ENGINEERING

MUR DM 117/Aiko - Dynamic modelling of spacecraft relative maneuvering for real time GN&C strategies

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019] AIKO S.r.l. [P.iva/CF:11686290013]
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Context of the research activity	<p>The research will focus on aspects of Space Flight Dynamics, and Guidance, Navigation & Control of Autonomous Orbiting Space Systems, in particular during the execution of both reorientation (attitude) and proximity orbital maneuvers.</p> <p>In addition to traditional method of dynamic modelling and guidance, navigation and control synthesis, methods based on Artificial Intelligence/Machine Learning techniques will be investigated.</p> <p>Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP E14D23001970004</p>
Objectives	<p>The methods and practice of developing dynamic modeling for spacecraft relative maneuvering will be investigated, aiming in particular at realistic analytical method for the training and simulation of state-of-the-art techniques of Guidance, Navigation and Control, including ones based on Artificial Intelligence / Machine Learning.</p> <p>The doctorate will be in collaboration with the company AIKO, of Torino, where the candidate will spend a portion of his/her time during the entire duration of the doctorate. An experience abroad of at least six months will be fostered and it is expected.</p>
Skills and competencies for the development of	<p>Requirements: a master degree in Aerospace Engineering, Physics, Mathematics, Computer Science or related subjects, and a striving passion for research in the area mentioned above.</p> <p>Fluency in English, written and spoken; experience with Matlab, Python or other coding language. An experience outside of Italy will be greatly appreciated.</p> <p>Previous excellent knowledge is requested in one or both of the following two</p>

the activity

subject matters, together with a commitment to study the other one in great depth (in case only one is present): 1) engineering mechanics, in particular regarding astrodynamics (rotational and orbital) ; 2) AI/ML methods and techniques.