



● **WORK EXPERIENCE**

12/2021 – CURRENT – Rome, Italy

TUTOR OF THE FLIGHT MECHANICS COURSE – SAPIENZA

The activity concerns support for students for exercises and projects during the course.

08/2020 – 10/2020 – Rome, Italy

POST GRADUATE RESEARCH FELLOW – SAPIENZA

Analysis of techniques for the reconstruction of the trajectory of the launchers in the atmospheric flight phase

02/2019 – 02/2020 – Rome, Italy

FRONT-OFFICE – ERASMUS OFFICE AT SAPIENZA

I provided my support to the office staff to solve student problems

11/2016 – 11/2017 – Rome, Italy

LIBRARY ASSISTANT – MECHANICAL AND AEROSPACE ENGINEERING LIBRARY AT SAPIENZA

I provided my support to the library staff for Cataloguing and Lending books

● **EDUCATION AND TRAINING**

11/2020 – CURRENT – Rome, Italy

PH.D. IN AERONAUTICAL AND SPACE ENGINEERING – Sapienza

The research activities aim at investigating the modelling and analysis or rebuilding of the "best-estimated" trajectory of a multi-stage launch vehicle during the atmosphere ascending flight. The research is carried out within a research agreement with the Italian Space Agency in the framework of dynamics and control of the present and future evolution of the Vega launcher. Main aspects of the work:

- Launch vehicle (LV) medium-fidelity modelling and simulation including i) characterization of the rigid and elastic dynamics, ii) sensor modelling, iii) GNC.
- Study of nonlinear estimation algorithms: i) extended Kalman filter (EKF), ii) iterated extended Kalman filter (IEKF), iii) UKF.

Other activities:

- LV flight control system design and tuning (attitude control).
- Study of the effects of integration of Adaptive augmenting control (AAC) in a LV flight control system.

EQF level 8 |

https://phd.uniroma1.it/web/DOTTORANDI-INGEGNERIA-AERONAUTICA-E-SPAZIALE_nI3556_IT.aspx

01/2017 – 03/2020 – Rome, Italy

MASTER'S DEGREE IN "AERONAUTICAL ENGINEERING" (FLIGHT SYSTEMS AND AIR TRANSPORT) – Sapienza

- Study of frequency domain analysis method for MIMO systems.
- Model Based Design approach for the realization of an entire flight control system for a UAV autopilot in Matlab® e Simulink®. Development of PID controllers for external control loops and use of RSLQR (robust servomechanism LQR) technique for the realization of internal control loops.
- Software in the Loop (SIL) simulation carried out in Matlab® e Simulink® to demonstrate control system robustness and command tracking performance in presence of model parameters uncertainties, noise and atmospheric disturbances.

Thesis: chapton thesis: Robust control techniques for fixed-wing UAVs

107/110 | EQF level 7

09/2019 – 11/2019 – Rome, Italy

CODING PYTHON – Spazio Chirale

- Object Oriented Programming in Python
- Use of standard and nonstandard Python library as Numpy, SciPy, Pandas, Matplotlib, Sympy
- Basic knowledge of Tensor flow library

10/2017 – 05/2018 – Rome, Italy

SAPIENZA FLIGHT TEAM MEMBER – Sapienza University – Laboratory of Flight Dynamics

- The team focuses on designing an Unmanned Aerial Vehicle (UAV) to then present their work at international competitions (AUVSI-SUAS) among peer teams
- Development of experimental methodologies to building servo models, subsequent implementation of the models in Simulink® and testing via Software in the Loop (SIL) and Hardware in the Loop (HIL) simulations.
- Integration of sensors using the S-Function for embedded devices in the autopilot software
- Use of Simulink® to automatically generate C code for embedded platforms
- Sizing and data management of telemetry system

09/2013 – 12/2016 – Rome, Italy

BACHELOR'S DEGREE IN AEROSPACE ENGINEERING – Sapienza

Thesis: chapstone thesis: Auxetic Materials and their Applications

102/110 | EQF level 6

09/2008 – 06/2013 – Foggia, Italy

TECHNICAL INSTITUTE FOR BUILDING SURVEYORS – Istituto Tecnico per Geometri "E. Masi"

(High School Diploma)

98/100

09/2010 – 09/2013 – Foggia, Italy

CONSERVATORY OF MUSIC (PRE-ACADEMIC COURSE IN SAXOPHONE) – Conservatorio di Musica "Umberto Giordano"

Exams: Saxophone: 8/10, Complementary Piano: 7/10, Solfège: 9.5/10

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B1	B2	B1	B1	B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● DIGITAL SKILLS

Other skills

Organizational and planning skills | leadership and team management | Problem solving (problem analysis) | Decision-making | Motivated | Team-work oriented | Analytical skills

Digital skills

Latex: advanced user | Embedded Devices | Matlab/SIMULINK | Good command of Arduino, Raspberry Pi platforms | Wolfram Mathematica (Basic) | Windows Linux OS | LinkedIn | MSC Nastran/Patran | Z oom | Google Drive | Basics knowledge of working in AutoCAD | Google Docs | Microsoft Office | Programming Languages: C, C++, Python, Matlab

● PUBLICATIONS

Optimal Tuning for Robust Control of a Small Fixed-Wing UAV

<https://arc.aiaa.org/doi/abs/10.2514/6.2021-1057> - 2021

Trotta, D., De Matteis, G., Zavoli, A., & D'Antuono, V. (2021). Optimal Tuning for Robust Control of a Small Fixed-Wing UAV. In *AIAA Scitech 2021 Forum* (p. 1057).