



Alessandro Lotti

Date of birth: 06/27/1996 | **Nationality:** Italian | **Email address:**

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● ABOUT ME

I am a passionate aerospace engineer and Ph.D. student specializing in space systems and computer vision. With a strong work ethic I excelled in my BSc and MSc, while also privately teaching high school students and working as a degree program tutor. I proudly co-founded EUROAVIA Forlì-Bologna. In February 2021, I joined the Microsatellites and Space Microsystems Lab at the University of Bologna.

● EDUCATION AND TRAINING

11/2021 – 10/2024 Forlì, Italy

DOCTORATE - AEROSPACE SCIENCE AND TECHNOLOGY Alma Mater Studiorum - Università di Bologna

Research topic: *"autonomous navigation of satellites for proximity and docking operations"*.

- Specialized in monocular pose estimation using deep learning, emphasizing algorithm deployability and domain gap.
- Supervised 6 BSc students on various deep learning topics for space applications.

10/2018 – 12/2020 Forlì, Italy

MASTER OF SCIENCE - AEROSPACE ENGINEERING Alma Mater Studiorum - Università di Bologna

Thesis in collaboration with Alén Space (Spain), conducted remotely due to Covid restrictions, on the preliminary design of the communication system for an ESA-contracted robotic lunar cave exploration study.

Final grade (out of 110) - 110 Cum laude |

Thesis Robotic exploration of lunar caves: concept analysis of the communication system for an ESA Moon mission

09/2015 – 10/2018 Forlì, Italy

BACHELOR OF SCIENCE - AEROSPACE ENGINEERING Alma Mater Studiorum - Università di Bologna

Final grade (out of 110) - 110 Cum laude |

Thesis Study and implementation of GPS navigation algorithms for orbital determination applications.

● WORK EXPERIENCE

06/2023 – 09/2023 Bertinoro, Italy

TEACHING TUTOR FONDAZIONE ALMA MATER

- Organized, coordinated and supervised activities of the International Summer School on Industrial Engineering for Advanced Automotive - a two-weeks training program conducted in collaboration with prominent automotive manufacturers (Ducati, Lamborghini, Ferrari, Bucci Composites) targeting master's students from the Motorvehicle University of Emilia-Romagna.
- Contributed to the admission committee, conducting admission interviews.

10/2022 – 06/2023 Forlì, Italy

MATLAB STUDENT AMBASSADOR THE MATHWORKS, INC. (VIA ADECCO ITALIA S.P.A.)

- Conducted MathWorks branded seminars on MATLAB applications in numerical computing and deep learning.
- Delivered seminars within engineering bachelor's and master's degree courses at the University of Bologna.

08/2022 – 09/2022 Bertinoro, Italy

TEACHING TUTOR ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA

- Coordinated and supervised activities of the International Summer School on Industrial Engineering for Advanced Automotive - a two-weeks training program conducted in collaboration with prominent automotive manufacturers (Ducati, Lamborghini, Ferrari, Bucci Composites) targeting master's students from the Motorvehicle University of Emilia-Romagna.

Department Department of Industrial Engineering

11/2021 – 06/2022 Forlì, Italy

MATLAB STUDENT AMBASSADOR THE MATHWORKS, INC. (VIA ADECCO ITALIA S.P.A.)

- Conducted MathWorks branded seminars on MATLAB applications in numerical computing and deep learning.
- Delivered seminars within engineering bachelor's and master's degree courses at the University of Bologna.

10/2021 – 09/2022 Bologna, Italy

TEACHING TUTOR ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA

- Served as a tutor for the course of Calculus and Linear Algebra, Bachelor's Degree Programme in Economics and Finance.
- Conducted supplementary lessons and organized exam simulations for students.

Department Department of Economics

09/2021 – 12/2021 Bologna, Italy

WEBINAR ASSISTANT FONDAZIONE ALMA MATER

- Provided technical support for a course on Labor Law and Procedure.

08/2021 – 09/2021 Bertinoro, Italy

TEACHING TUTOR ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA

- Coordinated and supervised activities of the International Summer School on Industrial Engineering for Advanced Automotive - a two-weeks training program conducted in collaboration with prominent automotive manufacturers (Ducati, Lamborghini, Ferrari, Bucci Composites) targeting master's students from the Motorvehicle University of Emilia-Romagna.

Department Department of Industrial Engineering

02/2021 – 10/2021 Forlì, Italy

GRADUATE RESEARCH FELLOW ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA

Research topic: *Artificial Intelligence for real time satellite pose estimation from monocular images in a docking scenario;*

- Developed a synthetic dataset of spacecraft images in Blender for proximity operations scenarios.
- Designed neural networks for improved accuracy-latency on embedded hardware (Coral Dev Board Mini).
- Funded and supported by Thales Alenia Space Italia.

Department Interdepartmental Centre for Industrial Aerospace Research - CIRI Aerospace

12/2018 – 10/2019 Forlì, Italy

DEGREE PROGRAM TUTOR ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA

- Conducted presentations during orientation events.
- Managed the application process for international students applying to the Master's Degree in Aerospace Engineering.
- Offered support and guidance to students, both current and prospective, within the Bachelor's and Master's degree programs.

Department Department of Industrial Engineering

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
FRENCH	B2	B2	B2	B2	B2

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

● DIGITAL SKILLS

Tensorflow | Blender | TracePro | Astro | Python | MATLAB | Simulink | Cloud Computing | GitHub

● ADDITIONAL INFORMATION

PUBLICATIONS

[The Nanosatellite-Class Attitude Control Facility at ESA-ESTEC](#) – 2023

A. Curatolo, D. Modenini, G. Curzi, A. Lotti, D. Pecorella, E. Strollo, A. Locarini, A. Hyslop, D. Oddenino. Presented at the Joint 10th EUCASS – 9th CEAS, Lausanne, Switzerland, July 9-13, 2023. doi: <https://doi.org/10.13009/EUCASS2023-760>

[Improving Satellite Pose Estimation Across Domain Gap with Generative Adversarial Networks](#) –

2023

A. Lotti. Presented at the 3rd AIDAA Aerospace PhD Days, Bertinoro, Italy, April 16-19, 2023. Published in Aerospace Science and Engineering – III Aerospace PhD-Days, pp. 376–381, 2023.

[Investigating Vision Transformers for Bridging Domain Gap in Satellite Pose Estimation](#) – 2023

A. Lotti, D. Modenini, and P. Tortora. Presented at the 2nd International Conference on Applied Intelligence and Informatics - The use of Artificial Intelligence for Space Application, Reggio Calabria, Italy, September 1-3, 2022. Published in Studies in Computational Intelligence, vol. 1088, pp. 299–314, 2023. doi: https://doi.org/10.1007/978-3-031-25755-1_20

[Deep Learning for Real-Time Satellite Pose Estimation on Tensor Processing Units](#) – 2023

A. Lotti, D. Modenini, P. Tortora, M. Saponara, and M. A. Perino. Journal of Spacecraft and Rockets, vol. 60, no. 3, pp. 1034–1038, May 2023. doi: <https://doi.org/10.2514/1.A35496>

DRIVING LICENCE

Driving Licence: AM

Driving Licence: A1

Driving Licence: B

HONOURS AND AWARDS

12/2021

1st place - Telespazio Technology Contest (#T-TeC 2021) – Telespazio SpA Led the proposal “Multi-Purpose ModularSatellite Servicer”: a modular 12U CubeSat concept for on-orbit life extension.

Prize: € 10.000

Team members: A. Lotti, G. Curzi, A. Bahu, A. Locarini, D. Modenini

Link <https://www.telespazio.com/en/news-and-stories-detail/-/detail/winners-t-tec-2021>

11/2020

Study award - engineering courses – Alma Mater Studiorum - Università di Bologna Recipient of a study award by the Department of Industrial Engineering recognizing academic achievements especially during the challenging 2019/2020 second semester amidst COVID-19. The award considers the overall GPA.

Prize: € 1.500

05/2017

AlmaContest – Alma Mater Studiorum - Università di Bologna Developed an Android application to promote counseling for prospective students and facilitate the search for information about the courses, structures, and services of the University of Bologna.

Prize: € 2.750

Team members: L. Fernandez Gonzalez, A. Lotti, M. Mariotti

Link <https://magazine.unibo.it/archivio/2017/05/15/almacontest-proclamazione-dei-vincitori-del-concorso-di-idee-sullorientamento>

RECOMMENDATIONS

Paolo Tortora PhD supervisor

Professor of Space Systems - Alma Mater Studiorum - Università di Bologna

Email paolo.tortora@unibo.it

Dario Modenini PhD Co-supervisor

Professor of Space Systems - Alma Mater Studiorum - Università di Bologna

Email dario.modenini@unibo.it

Maria Antonietta Perino Company supervisor - research fellow project

Director Space Economy Exploration and International Network - Thales Alenia Space Italia

Email mariaantonieta.perino@thalesalieniaspace.com

Paolo Panarese Company supervisor - MATLAB Ambassador

Principal Education Customer Success Engineer - The MathWorks Inc.

Email ppanares@mathworks.com

Diego Nodar López Company supervisor - Master thesis

Alén Space co-founder.

Email diego.nodar@alen.space

VOLUNTEERING

09/2018 – 09/2019 Forlì

EUROAVIA Forlì-Bologna Co-Founder and Executive Member

HOBBIES AND INTERESTS

Personal finance

Politics

Volleyball

Running

Tech

I hereby authorize the use of my personal data in accordance to the Italian Act196/2003 and the GDPR679/16 -"European regulation on the protection of persona data".

Forlì , 01/12/2024