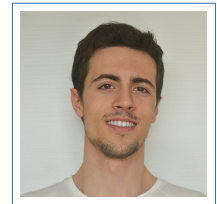


Luigi Mascolo

Curriculum Vitae

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Education

- 2015–Present **MSc in Aerospace and Astronautical Engineering**, *Politecnico di Torino*, Turin, Italy.
(Exp. 2017) Specialising in Space Missions and Trajectory Optimisation.
- Sept. 2011– **BSc in Aerospace Engineering**, *Politecnico di Torino*, Turin, Italy.
March 2015 GPA – 3.6/4 (105/110). Specialised in atmospheric Entry, Descent and Landing Systems.
- Sept. 2009 – **Math and Science Academy**, *Barton Court Grammar School*, Canterbury, UK.
Jan. 2010 GPA – A+. Internship trimester, specialized in JAVA programming and practical chemistry.
- Sept. 2006 – **Liceo Classico**, “*F. De Sanctis*”, Trani, Italy.
June 2011 GPA – A+ (100/100). High School (Classical Studies) with ancient Greek and Latin languages.

Bachelor Thesis

- Title *Atmospheric Re-entry Systems with Flexible and Inflatable Technologies*
- Supervisors Prof. M. Battipede & Prof. D. D'Ambrosio, Politecnico di Torino
- Company Eng. A. Messidoro, Aerosekur S.p.A., Caselle T.se, (TO), Italy
- Description This thesis explored the implementation of the new-born inflatable technologies (IADs, LIEDs, etc) in the EDL phases, both for a low-mass return mission from the ISS and for a high-mass manned mission to Mars.

Experience

Vocational

- 2015–Present **UNISON Turin student representative**, UNISEC *Student Organisations*, www.unisonitaly.eu.
UNISON is a student organisation, founded by UNISEC in 2003 in Japan, that helps university students to pursue practical activities and projects in the aerospace and astronautical branch. In 2015 UNISON Italy was founded and today it counts on the collaboration of three universities, the University of Bologna, the University of Rome and the Politecnico di Torino. I am in charge for the next year to be the 2016-2017 Italian representative.
- Sept. 2014– **Teaching Assistant and Student Tutor**, TECHNICAL DRAWING, Polytechnic of Turin.
Feb. 2016 In this two-year experience, still in progress, my aim has been to help BSc Aerospace students to succeed in technical drawing, both for manual and CAD.
Detailed assignments:
- Teaching aid in classes and exercises
 - Mid-term and final exam correction and evaluation
 - SOLIDWORKS teaching and evaluation
 - 3D modelling - particular attention for advanced features and basic FEM analyses
 - 2D technical drawing - hints to prepare a physically correct model, able to be produced in industry in accordance with the existing norms.
- 2014–Present **CAD designer, CAE analyst**, TEAM D.I.A.N.A., Politecnico di Torino.
The team D.I.A.N.A. (it stands for Ducti Ingenio Accipimus Naturam Astronum) is a group of students inside the Polytechnic of Turin which deals with space robotics. I worked in the turret team for the Lunar rover and in the robotic arm group for the last project.
Detailed assignments:
- 2nd Rover
 - Modelling, development and production of the turret, which sustains the payload
 - FEM analysis and production of the central joint and circular damper
 - 3rd Rover
 - Modelling, development and FEM analysis of the arm-wrist-hand system
 - Development of an innovative 3 degree of freedom wrist with the use of a linear clutch.

Conferences

October 2015 **66th International Astronautical Conference**, IAC 2015, Jerusalem, Israel.
D2,3,7,x30698 "Atmospheric Re-entry Systems with Flexible and Inflatable Technologies".

Projects

March 2016 – **International Space Apps Challenge 2016**, NASA, <https://2016.spaceappschallenge.org>.
April 2016 Participation in the advanced challenge "Asteroid mining", in which it is required the development of a method to characterize the composition of an asteroid for mining potential and a process for mining different compositions. The project is already in progress.

2015–Present **FATO Mars Team**, *International Gemini Mars Design Competition*, Mars Society, www.marssociety.org.
Four of my colleagues and I took part at the Mars Society competition, in which the aim is to project and estimate, in terms of safety, reliability and costs, all the aspects of a possible end-to-end two-person Mars flyby mission with a re-entry by 2022. My main contributions have been, as regards the technical side, the trajectory design, the concept of operations, the concept design and the architecture trade-off, while I was in charge of the graphic production of the mission simulation and the website development (www.fatomarsteam.it).

2015–Present **Advanced Patterns and Models for Atmospheric Entry with Inflatable Decelerators**, *Politecnico di Torino*, under revision.

Miscellaneous

2014–Present **Certified SolidWorks Professional**, *Mechanical Design*, C-BZLQ7HHVKM, with honors.

2014–Present **Certified SolidWorks Associate**, *Mechanical Design*, C-3WVFCVKWJN.

2013–Present **Civil aircraft private pilot**, *Private Pilot License*, I-PPL-A-037048.
It is responsibility of the pilot that an aircraft is in the airworthiness status for private flights. I must check structural and mechanical components, including the propeller and the engine, before each take-off. It is required an efficient communication capability (in both Italian and English) as well as a significant problem-solving skill.

Computer skills

Languages C, MATLAB[®]/Octave, JAVA, L^AT_EX

Space Mission AGI System ToolKit STK[®], NASA General Mission Analysis Tool GMAT[®], SPICE[®] NASA Toolkit

CAD/FEM DS SolidWorks[®] (CSWP/CSWA), MSC Patran[®]/Nastran[®], MSC Adams[®]

Graphics Adobe[®] After Effect/Dreamviewer/Fireworks/Photoshop, Blender, Cryengine, Pinnacle Studio

Certifications AICA ECDL core, DS SolidWorks CSWA/CSWP R4

Communication Skills

2016–Present **Italian student representative**, *UNISON Italy*.
Spokesman and student national point of contact for UNISEC Europe.

2015–Present **Politecnico di Torino student representative**, *UNISON Italy*.
Coordinator for aerospace and astronautical projects for students from Politecnico di Torino. Spokesman, in conjunction with the two other Italian representatives, for UNISEC Europe.

June 2015 **International Planetary Probe Workshop**, IPPW 15, Köln, Germany.
Oral presentation – "Planetary Atmospheric EDL with Flexible and Inflatable Technologies".

2014–2015 **Mechanical group representative**, TEAM D.I.A.N.A., Polytechnic of Turin.
Mars Rover – Robotic 3-DOF wrist project.

Languages

Italian **Mother tongue**
English **Advanced**

C1 Trinity ISE III "Proficient User"

Interests

- End-To-End Mission Analysis and Design
- Space Propulsion
- Teaching and Student Assistance
- Chess/draughts
- Fence (foil individual and épée team)
- Trajectory optimisation
- Human Outer Planet Exploration (HOPE)
- Piano (playing and composing songs)
- Strategy/Adventure Role-Playing Games
- Tennis/swimming amateur

Exams

- 2012 **Attendance of Bachelor's Degree in Aerospace Engineering.**
Chemistry, 30 cum Laude, (A+/A), (GPA 4/4).
English Language, Pass, -, -.
Computer Science, 30 cum Laude, (A+/A), (GPA 4/4).
Geometry, 23/30, (B-/A), (GPA 2.83/4).
Mathematical Analysis I, 18/30, (D/A), (GPA 1.7/4).
- 2013 **Technical Drawing**, 23/30, (B-/A), (GPA 2.83/4).
Physics I, 25/30, (B/A), (GPA 3.16/4).
Structural Mechanics, 30/30, (A/A), (GPA 4/4).
Applied Thermodynamics and Heat Transmission, 19/30, (C-/A), (GPA 2/4).
Mathematical Analysis II, 27/30, (A-/A), (GPA 3.7/4).
Economics, Aviation Law and Human Factor, 27/30, (A-/A), (GPA 3.7/4).
Physics II, 24/30, (B-/A), (GPA 3/4).
Aerospace Vehicles Evolution, 26/30, (B+/A), (GPA 3.4/4).
- 2014 **Aeronautics Constructions**, 29/30, (A/A), (GPA 3.89/4).
Electrotechnics and Electronics, 24/30, (B-/A), (GPA 3/4).
Advanced CAD Technologies for Product Development, 30 cum Laude, (A+/A), (GPA 4/4).
Applied Mechanics, 28/30, (A-/A), (GPA 3.8/4).
Avionics, 26/30, (B+/A), (GPA 3.4/4).
Chaos and Complexity - Networks Theory, 28/30, (A-/A), (GPA 3.8/4).
Material Technologies and Metallurgy, 28/30, (A-/A), (GPA 3.8/4).
Aircraft Engines and Propulsion, 26/30, (B+/A), (GPA 3.4/4).
- 2015 **Flight Mechanics**, 30/30, (A/A), (GPA 4/4).
Aerodynamics, 30/30, (A/A), (GPA 4/4).
Bachelor of Science Thesis in Aerospace Engineering, 105/110, (A/A), (GPA 3.85/4).
Attendance of Master's Degree in Aerospace and Astronautical Engineering.
Educational Activities in Student Teams, Pass, -, -.
- 2016 **Gasdynamics**, 30/30, (A/A), (GPA 4/4).
Astrodynamic, 30 cum Laude, (A+/A), (GPA 4/4).
Expected.
Dynamic Flight Mechanics, Attended.
Numerical Methods, Attended.
Aeronautics Structures, Attending.
Aerospace and Astronautical Avionic System, Attended.
Aircraft Engines, Attended.
Project of Space Systems and Space Propulsion, Attending.
Helicopter Flight Mechanics, Attending.
- 2017 **Aeroelasticity.**
Project of Aerospace Vehicles.
Structures for Aerospace Vehicles.
Master of Science Thesis in Aerospace and Astronautical Engineering.