Federico Cipriani

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PERSONAL STATEMENT

Aerospace engineer deeply fascinated by robotics and programming. Keen to enter this sector with the goal of revolutionising it with new design solutions, offering a mix of skills developed during my current job as Performance Engineer, the thesis work at the Cranfield University (UK) and the experience as mechanical designer for a student team project which collaborated with the major European space agencies (ESA, DLR, SNSB). Goal-oriented team player, time-management skills, strong interpersonal skills and tireless curiosity developed after years of experiences, challenges and travelling.

KEY ACHIEVEMENTS

- **Designed, developed and built the mechanical subsystem of POLARIS Experiment**, one of the chosen experiments for BEXUS 18 campaign (ESA Educational Student Programme) which aimed to develop a new concept of variable resistance radiator.
- Completed exams of MSc in Aerospace Engineering at the University of Padova (top 6 in Italy) and **awarded with an ERASMUS+ Studio and Double Degree Programme scholarship** in order to attend the MSc in Thermal Power at the University of Cranfield (worldwide top 40 for Mechanical and Aeronautical Engineering).
- **Elected as Symposium Czar for the 46th edition of the Engine Systems Symposium** which took place at the Cranfield University on 6th-7th April 2017.

WORK EXPERIENCE

Performance Aerothermal Engineer, Rolls-Royce plc through QuEST Global Engineering Ltd, Derby (UK)
September 2017 – present

The job mainly implies **data analytics aimed to certify and improve the current performance characteristics** of the Trent XWB engines. Since the beginning, I have been involved in both **Transient Performance analysis and Steady State performance analysis**. The tasks I carried out included:
- Analysis of the thrust response of the engine from data gathered during flight tests, useful to determine compliance with Airbus and EASA requirements
- Study on fan flutter and its influence with engine operation at different points in flight envelope
- Mission definition and gathering of key parameters values aimed to lifing evaluation of different engine components
- Analysis of the effect of bleed extraction on turbine temperatures and determination of strategy for improvement

POLARIS Experiment - ESA Educational BEXUS campaign 18/19
September 2013 – May 2015

Experiment which aimed to test a new concept of variable resistance radiator for space applications, entirely developed by the team. The experiment exploited also a new kind of actuation mechanism based on Electro-Active Polymers, at that moment scarcely tested in stratospheric and space conditions.

- **Collaborated with major European space agencies** (ESA – European Space Agency, DLR – German Aerospace Center, SNSB – Swedish National Space Board) and experts in aerospace structures, mechanisms, thermal control and space mission design.

- **Headed the entire mechanical subsystem design** of the experiment, work carried out utilising **Solidworks for 3D CAD modelling** and **ANSYS for FEM analysis**.
- **Led the experiment assembly procedure** to both perform testing (vibrational, mechanical, thermic) and assess the mechanical integrity in the prelaunch phase.
- **Presented the development of the mechanical subsystem design**, along with solved issues and adopted solutions in front of panels of engineers from the mentioned agencies on occasion of determined deadlines, which characterised the evolution of a space mission.

EDUCATION

MSc Thermal Power (option Aerospace Propulsion): Cranfield University, Cranfield, UK
October 2016 - September 2017

- **Individual Thesis**: "Multi-Objective Optimisation of Short Intakes". The work aims to optimise aerodynamically the design of the new generation of short intakes, exploiting **3D CFD analysis** and optimisation through the use of different sampling methods, **Response Surface Methodology (RSM) and Genetic Algorithms (GAs)**, implemented using Python.
- **Project**: "CFD analysis of a controlled-diffusion compressor stator blade". Assignment carried out for the CFD course, which involved the extensive use of ANSYS ICEM 17.1 and ANSYS Fluent 17.1. It required to model the geometry of a compressor blade and to carry out the CFD simulations studying the turbulence behaviour.
- **Group project**: 46th Engine System Symposium, elected as Symposium Czar and responsible of the whole conference organisation in which 82 MSc Thermal Power students were involved and divided in sub-teams for organisational purposes. 5 big companies from the aeronautical sector (Mitsubishi Hitachi, ITP UK, etc.) were invited and the conference attracted interested people both from the industry and the academic sectors.

MSc Aerospace Engineering: Università degli Studi di Padova, Padova, Italy
November 2013 – December 2017

- **Group projects**: POLARIS Experiment (in collaboration with ESA); ArHex Project, development of a hexacopter.
- **Publications**: A new concept variable resistance radiator (65th IAC, Toronto (CDN)); POLARIS Experiment: data collected during the stratospheric flight on the balloon BEXUS 18 (June 2015, Tromso (NOR), PAC – ESA Symposium on European Rocket and Balloon Programme and related research).

BSc Aerospace Engineering: Università degli Studi di Padova, Padova, Italy
October 2009 – November 2013

SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

- **Languages**: Italian (Native), English (Fluent/working proficiency)
- **IT Skills**:
  - Autodesk Inventor and Solidworks for 3D CAD modelling, high knowledge of Patran/Nastran for FEM analysis.
  - ANSYS ICEM and ANSYS Fluent for aerodynamic analysis.
  - Good expertise of Python language, extensively used also during my Master thesis work.
  - Good knowledge of MATLAB/Simulink.
  - Proficient in MS Office Word, Excel and Powerpoint.
- **Individual interests**: International travelling (twice in India for solo travels, 10+ countries visited), running, CrossFit, gym and nutrition.