

Sandro Papais

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EDUCATION

McGill University

Montreal, QC

B.Eng. Honours Mechanical Engineering, Minor in Management.

May 2019

- CGPA: 3.51/4.00. Deans Honour List 2014-2015. Thesis on spacecraft dynamics and navigation.

EXPERIENCE

Reaction Dynamics – GNC and Propulsion Test Engineering Intern

Fall 2018

- Develop and execute plans for testing of rocket engines and components. Design and implement test bench systems.
- Design high-level architecture for Guidance, Navigation, and Control (GNC) systems and perform feasibility studies.

European Space Agency, ESTEC – Robotic and Vision Systems Intern

Summer 2018

- Developed algorithms and hardware for localization and 3D mapping in combined rover, lander, and drone studies.
- Used Matlab, Python, OpenCV, and deep learning for depth estimation, point cloud registration, and object detection.

McGill Rocket Team – Director (Previously: Propulsion, Aerostructures Lead)

Fall 2015 – Summer 2018

- Managed a team of more than 100 students to design, manufacture, and launch sounding rockets up to 30,000 feet.
- Performed design, manufacturing, and testing of hybrid rocket engine and airframe separation system components.
- Used CAD, CFD, combustion modelling, and structural FEA to analyze and optimize the designs.

McGill University Aerospace Dynamics and Control Lab – Undergraduate Thesis

Fall 2017 – Winter 2018

- Assessed low-thrust spacecraft inertial navigation deep space applications using newly developed sensor technology.
- Modelled interplanetary spacecraft trajectories to evaluate the device's effectiveness and mission cost reduction.

Pratt & Whitney Canada – Reliability Engineering Intern

Winter 2018

- Provided technical support and created automated VBA diagnostic and health monitoring tools for engines in service.
- Performed engine parameter trending, fault isolation, root cause analysis, burndown plans, and financial analysis

McGill University Structural Engineering Lab – Risk Engineering Undergraduate Researcher

Summer 2016

- Performed data analysis and statistical procedures in Matlab for vibrational non-destructive testing methods.
- Work helped lead to significant improvement of damage detection, probability of false alarms and reliability levels.

McGill University Mathematics and Statistics Department – Undergraduate Teaching Assistant

Winter 2016

- Instructed tutorials of 50 undergraduates in advanced calculus, differential equations, and computer aided design.
- Developed MATLAB programs to visualize representations of complex mathematical systems for improved learning.

LEADERSHIP

Montreal Space Symposium – Co-Founder, Chair

Summer 2017 – Present

- Two-day space conference with over 400 attendees and 52 speakers to discuss the future of space in Canada.
- Formed the organizing committee made up of 9 local student space organizations and oversaw its operations.

Canadian Rocketry Consortium – Founder, President

Summer 2017 – Summer 2018

- Formed a consortium of 16 university rocket engineering research organizations from across Canada.
- Strengthen technical collaboration, public relations, and joint funding opportunities for rocketry industry in Canada.

McGill Engineering Undergraduate Society – Board of Governors (Prev: Funds Director)

Fall 2016 – Winter 2018

- Founding board member; established oversight and ensured long term vision through policy and financial review.

SKILLS

Programming: Advanced: MATLAB. Intermediate: VBA, C, Python, Arduino. Beginner: Bash, Java, FORTRAN, SQL.

Software: MS Word, PowerPoint, Excel, LaTeX, SolidWorks, AutoCAD, ANSYS, NX, CATIA, MasterCAM, SAP.

Certification: CPR, First Aid, WHMIS, Lean 6 Sigma White Belt, Drivers License, Machine Tools Certification.

Languages: English (native proficiency). Italian (elementary proficiency). French (elementary proficiency).

AWARDS

Spaceport America Genesis Cup, McGill Rocket Team, 2018 – **1st of 124 international rocket engineering teams.**

Elvie Smith Award, Canadian Aeronautics and Space Institute, 2018 – **\$5000 for outstanding aerospace contribution.**

Research Experience Award, Natural Sciences and Engineering Research Council, 2018 - **\$4500 for industry R&D.**

Next Generation Scholarship, Ordre des Ingénieurs du Québec, 2018 – **\$3000 for leadership and academics.**

Forces Avenir Science and Technology Award, Montreal Space Symposium, 2018 – **\$2000 for community impact.**

McGill Design Team of the Year, McGill Rocket Team, 2017 – For collaborations and contributions at McGill.

Director of the Year, McGill EUS, 2017 – Recognition for outstanding new initiatives and funding processes overhaul.

McCaig Engineering & John Howard Ambrose Scholar, McGill University, 2016 – \$1500 for academic achievement.

Annual Basilicata Scholarship, Associazione Basilicata, 2012 – \$500 for academics and Italian community work.

PUBLICATIONS

Abstract refereed conference publication:

- S. Papais, B. Foing, “3D vision studies for ESA EuroMoonMars 2018 campaign,” 2nd Montreal Space Symposium, Montreal, QC, Oct 19, 2018.
- S. Papais, K. Carroll, and J. Forbes, “Low-Thrust Spacecraft Interplanetary Navigation Using Radiometric Tracking and Accelerometer Measurements,” 16th CASI Astro Conference, Toronto, ON, May 16, 2018.

News article interviews:

- J. Nishihata, “McGill Rocket Team Soars to First Place at Spaceport America Cup,” McGill Faculty of Engineering, July 13, 2018.
- N. Montillaro, “Why doesn't Canada have a rocket program,” CBC News, February 2, 2018.
- M. Boucher, “The Emergence of the Montreal Space Symposium,” SpaceQ Media, October 17, 2017.

Invited presentations:

- S. Papais, A. Marquis, M. Vandas, S. Bambey, A. Gagnon, “Canadian Student Rocketry Panel,” CSCA Canadian Smallsat Symposium, Toronto, ON, February 15, 2018.

PROFESSIONAL AFFILIATIONS

American Institute of Aeronautics and Astronautics (AIAA), Member	2018 – Present
Canadian Aeronautics and Space Institute (CASI), Member	2018 – Present
Canadian Space Society (CSS), Montreal Treasurer	2017 – Present