# JOAO DANTAS

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joaopadantas.com linkedin.com/in/jpdantas
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## EDUCATION

**Carnegie Mellon University**, Pittsburgh, PA *Nov 2021 – Present*
Ph.D. Exchange Program in Robotics

**Aeronautics Institute of Technology**, Sao Jose dos Campos, Brazil *Jan 2019 – Present*
Ph.D. in Electronic and Computer Engineering
Cum. GPA: 9.5 / 10.0

**Aeronautics Institute of Technology**, Sao Jose dos Campos, Brazil *Aug 2016 – Dec 2018*
M.Sc. in Electronic and Computer Engineering
Cum. GPA: 8.5 / 10.0

**Stony Brook University**, Stony Brook, NY *Aug 2016 – Dec 2018*
One-year Undergraduate Exchange Program in Mechanical Engineering
Cum. GPA: 3.93 / 4.00

**Aeronautics Institute of Technology**, Sao Jose dos Campos, Brazil *Jan 2011 - Dec 2015*
B.Sc. in Mechanical-Aeronautical Engineering
Cum. GPA: 8.7 / 10.0

## RESEARCH EXPERIENCE

**Robotics Institute, Carnegie Mellon University** Nov 2021 – Present
*Research Associate, AirLab* *Pittsburgh, PA*

Working with **Prof. Dr. Sebastian Scherer** to develop an artificial intelligence system to keep autonomous unmanned aircraft, in conjunction with manned traffic, safely separated and behave as expected when entering and leaving the traffic/break/formation pattern.

**Institute for Advanced Studies** Jan 2016 – Present
*Research Engineer, Decision Support Systems Subdivision* *Sao Jose dos Campos, Brazil*

Development of the **Aerospace Simulation Environment**, a custom-made object-oriented simulation framework that enables the modeling and simulation of military scenarios to support the development of tactics and procedures in the aerospace context for the Brazilian Air Force.

**Stony Brook University** May 2015 – Jul 2015
*Undergraduate Researcher, Department of Mechanical Engineering* *Stony Brook, NY*

Worked with **Prof. Dr. Carlos Colosqui** on Brownian Motion and methodologies for modeling and numerical analysis of stochastic transport processes, focusing on the dynamics of colloidal particles of micro and nanoscale dimensions at liquidfluid and liquidsolid interfaces

**National Council for Scientific and Technological Development** Aug 2011 - Jul 2013
*Undergraduate Researcher* *Sao Jose dos Campos, Brazil*

Worked with **Prof. Dr. Gilberto Petraconi** on the Scientific Initiation Scholarship Program to do research in plasmas, analyzing the effect of electron thermionic emission, and aerospace materials, researching composite materials used in ablative thermo-structural protective coatings for rocket engines

## PROFISSIONAL EXPERIENCE

**Brazilian Air Force** Jan 2013 – Present
*Research Engineer* *Sao Jose dos Campos, Brazil*

1st Lieutenant Engineer Officer

Research on military **Modeling & Simulation**, **Machine Learning** and **Data Science** for developing decision support systems

**COC Educational System** Feb 2017 – Jul 2021
*Mathematics Teacher and Scientific Olympiads Coordinator* *Sao Jose dos Campos, Brazil*

Responsible for the preparatory class for Scientific Olympiads
**158** medals and honorable mentions in **46** different national and international competitions

**Emerge Brazil** Oct 2016 – Dec 2017
*Co-founder and Head of Communications* *Sao Paulo, Brazil*

Specialized in the development of science-based innovation through the link with cutting-edge science
More than **300** technologies are mapped, with **60** technologies already working in partnership with the Brazilian Industry.

## SKILLS

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|---|---|
| **Natural Languages** | Native Portuguese ◇ Advanced English |
| **Programming Languages** | Python ◇ R ◇ SQL ◇ MATLAB ◇ LaTeX |
| **Deep Learning Framework** | Tensorflow ◇ Keras ◇ Pytorch |
| **Python Toolkits** | NumPy ◇ Pandas ◇ Matplotlib ◇ Scikit-Learn ◇ SciPy |

## AWARDS AND HONORS

**2022:** Fundacão Estudar Merit Scholarship for outstanding trajectory and academic potential (30 recipients out of 33,876 applicants)
**2021:** 3rd place in the 5th Brazilian Competition on Knowledge Discovery in Databases (KDD-BR)
**2021:** Military Bronze Medal received from the Brazilian Air Force
**2020:** Distinguished Fellowship Award for making significant contributions to the Fellows Community, Institute Four
**2019:** 6th place out of 39 competitors in the 3rd Brazilian Competition on Knowledge Discovery in Databases (KDD-BR)
**2019:** Ambassador Award of Excellence, International Youth Math Challenge
**2019:** 4th place in the Data Science Challenge at Engineering Education for the Future (EEF)
**2016:** Selected by Institute Four to participate at the Prolider Program (29 recipients out of 2,013 applicants)
**2015:** Honorable Mention in the Department of Humanities, Aeronautics Institute of Technology
**2014-2015:** Full scholarship from Brazil's Ministry of Education for one-year study program at Stony Brook University, College of Engineering and Applied Sciences ($\approx$ \$75,000)
**2014:** Military Merit Award from the Brazilian Air Force (25% best military behavior grades among the Officer Candidates)
**2011-2013: bf2011:** Fellowship of Scientific Initiation Scholarship Program for 24 months, National Council for Scientific and Technological Development
**2011:** 1st place overall out of 120 Officer Candidates, Brazilian Air Force Reserve Officer Training Corps (CPORAER-SJ)
**2011:** Approved in the Aeronautics Institute of Technology entrance exam, 120 recipients out of 7627 applicants
**2009:** Academic Merit Award from the Brazilian Air Force (25% best military grades)

**2007:** Bronze Medal, 10th Brazilian Olympiad of Astronomy and Astronautics (OBA) (187,726 competitors)
**2006:** Honorable Mention in the XIV Ceara Science and Biology Olympiad, a competition managed by the Federal University of Ceara, Brazil
**2006:** Gold Medal in the Internal Science Olympiads in the disciplines of Mathematics, Physics, Chemistry and Biology, Farias Brito High School, Brazil
**2004-2006:** Full scholarship for three years study program at Farias Brito High School, Brazil ($\approx$ \$30,000)
**2003:** Honor to Merit for 2nd place for 3 times and 5th place for 1 time in the Internal Mathematics Olympiad, Christus Middle School
**2003:** 2nd place in the 3rd Christus Exhibition of Science and Technology (EXCETEC) in the area "Exact, Social and Commercial Sciences" with the project "Educational Exodus Study", Christus Middle School, Brazil.

## PUBLICATIONS


[1] A. N. Costa, F. L. Medeiros, J. P. Dantas, D. Geraldo, and N. Y. Soma. Formation control method based on artificial potential fields for aircraft flight simulation. *SIMULATION*, 98(7):575–595, 2022.

[2] J. P. Dantas, A. N. Costa, M. R. Maximo, and T. Yoneyama. Enhanced self-organizing map solution for the traveling salesman problem. In *Anais do XVIII Encontro Nacional de Inteligência Artificial e Computacional*, pages 799–802. SBC, 2021.

[3] J. P. A. Dantas. Hexacóptero para monitoramento de construção civil: montagem, testes e operação. Senior Thesis, Instituto Tecnológico de Aeronáutica, São José dos Campos, SP, Brazil, 2015.

[4] J. P. A. Dantas. Apoio à Decisão para o Combate Aéreo Além do Alcance Visual: Uma Abordagem por Redes Neurais Artificiais. Master's Thesis, Instituto Tecnológico de Aeronáutica, São José dos Campos, SP, Brazil, 2018.

[5] J. P. A. Dantas, A. N. Costa, D. Geraldo, M. R. O. A. Maximo, and T. Yoneyama. Engagement decision support for beyond visual range air combat. In *Proceedings of the 2021 Latin American Robotics Symposium, 2021 Brazilian Symposium on Robotics, and 2021 Workshop on Robotics in Education*, pages 96–101, 2021.

[6] J. P. A. Dantas, A. N. Costa, D. Geraldo, M. R. O. A. Maximo, and T. Yoneyama. Weapon Engagement Zone Maximum Launch Range Estimation Using a Deep Neural Network. In A. Britto and K. Valdivia Delgado, editors, *Intelligent Systems*, pages 193–207, Cham, 2021. Springer.

[7] J. P. A. Dantas, A. N. Costa, V. C. F. Gomes, A. R. Kuroswiski, F. L. L. Medeiros, and D. Geraldo. ASA: A Simulation Environment for Evaluating Military Operational Scenarios. In *Proceedings of the 20$^{th}$ International Conference on Scientific Computing*, 2022.

[8] J. P. A. Dantas, A. N. Costa, F. L. L. Medeiros, D. Geraldo, M. R. O. A. Maximo, and T. Yoneyama. Supervised Machine Learning for Effective Missile Launch Based on Beyond Visual Range Air Combat Simulations. In *Proceedings of the Winter Simulation Conference*, WSC '22, 2022.

[9] J. P. A. Dantas, J. A. da Cunha, J. L. Silva, A. O. Arantes, and V. C. F. Gomes. Análise Exploratória de Dados de Acidentes Aeronáuticos no Brasil. *Revista Conexão SIPAER*, 9(2):106–127, 2018.

[10] J. P. A. Dantas and C. A. de Melo Silvestre. Teoria dos jogos aplicada ao combate BVR. *Aplicações Operacionais em Áreas de Defesa*, 20, 2017.

[11] J. P. A. Dantas and C. A. de Melo Silvestre. Modelo de simulação aplicado às missões de transporte na região amazônica. *Aplicações Operacionais em Áreas de Defesa*, 21:10–15, 2020.

[12] J. P. A. Dantas, C. A. de Melo Silvestre, D. A. Pamplona, and A. Tavares de Azevedo. Modelo de simulação aplicado à logística aérea na região amazônica. In *Anais do III Encontro Regional de Pesquisa Operacional do Sudeste*, 2018.

[13] J. P. A. Dantas, M. R. O. A. Maximo, A. N. Costa, D. Geraldo, and T. Yoneyama. Machine Learning to Improve Situational Awareness in Beyond Visual Range Air Combat. *IEEE Latin America Transactions*, 20(8), 2022.

[14] J. P. A. Dantas and G. Petraconi Filho. Estudo de uma descarga de catodo termiônico em baixa pressão. In *Anais do XVIII Encontro de Iniciação Científica e Pós-Graduação do ITA - XVIII ENCITA*, 2012.

[15] J. P. A. Dantas and G. Petraconi Filho. Aquisição automática de dados em ensaios de materiais de barreira térmica realizados em túnel de plasma supersônico. In *Anais do XIX Encontro de Iniciação Científica e Pós-Graduação do ITA - XIX ENCITA*, 2013.

[16] J. Patrikar, J. P. Dantas, S. Ghosh, P. Kapoor, I. Higgins, J. J. Aloor, I. Navarro, J. Sun, B. Stoler, M. Hamidi, et al. Challenges in Close-Proximity Safe and Seamless Operation of Manned and Unmanned Aircraft in Shared Airspace. In *Aerial Robotics Workshop, International Conference on Robotics and Automation (ICRA) 2022*, 2022.

## VOLUNTEERING

**International Astronomy and Astrophysics Competition** Apr 2020 – Jul 2021
*Ambassador* *Sao Jose dos Campos, Brazil*

Working to enables motivated students and supportive mentors to inspire youths for astronomy and astrophysics and to encourage them to participate in the competition

**International Youth Math Challenge** Jul 2019 – Jul 2021
*Ambassador* *Sao Jose dos Campos, Brazil*

Working to inform schools and encourage students and youths to participate in the competition

**Alpha Lumen Institute** Jun 2012 - May 2013
*Mathematics Teacher* *Sao Jose dos Campos, Brazil*

Teacher of mathematics in the preparatory class for the Aeronautics Institute of Technology entrance exam

## ADDITIONAL ACTIVITIES

Competitive basketball player (2007-2009) – Brazilian Air Force Academy, Pirassununga, Brazil
Amateur bodybuilder (2014-2015) – The National Physique Committe
Hobbies: hiking, cooking, traveling

August 14, 2022