Curriculum Vitae

Tomás Ignacio Opazo Toro

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PROFESSIONAL EXPERIENCE

Teaching Assistant, Aerospace Eng. Department, The Pennsylvania State University *2021-present*
Member of the Technical Advisory Board of Deepview Spa (part-time) *2020-present*
Research Assistant, AVIA Lab. The Pennsylvania State University *2021*
Development Engineer, SPEL Lab, Universidad de Chile *2013-2016*

EDUCATION

The Pennsylvania State University, USA *2016 - May 2022*
PhD in Aerospace Engineering
Dissertation title: Power minimization for fixed-pitch coaxial rotors in hover
Advisor: Professor Jack Langelaan, Director of Graduate Programs
MEng in Aerospace Engineering *2017*

Universidad de Chile, Chile *2007 - 2013*
Electrical Engineering
Thesis title: Requirements, implementation and verification of the nano-satellite Suchai
Advisor: Assistant Professor Marcos Diaz

Gymnasium Leopoldinum, Germany *2005 – 2006*
High school exchange student

CURRENT RESEARCH INTERESTS

Control allocation, performance estimation and optimization of over-actuated Unmanned Aerial Vehicles. Extremum seeking control algorithms. Bio-inspired models of perception and intelligence applied to robotic systems.

HONORS AND AWARDS

"Ramón Salas Edwards" award, Instituto de Ingenieros: "SUCHAI: Nanosatélite de la Universidad de Chile para la investigación aeroespacial" *2020*
Best paper award, Test and Evaluation session AHS 74th conference, Arizona, USA *2020*
Scholarship funding, PhD in Aerospace Eng. (Becas Chile Doctorado) *2017*
Scholarship funding, MEng in Aerospace Eng. (Becas Chile Magister) *2016*
Graduated with maximum distinction, Universidad de Chile *2013*

TECHNICAL EXPERIENCE

Extensive programming experience on python, C/C++, MATLAB, Bash.
Extensive experience on GNU/Linux systems and Object Oriented programming.
Certificated Remote Pilots under Part 107.
Extensive experience on design and construction of Unmanned Air Vehicles (UAV) for research.
Experience with embedded systems, single board computers and electronics.

TEACHING EXPERIENCE

Aerospace Department, The Pennsylvania State University *Spring 2022*
Teaching Assistant, AERSP 304 Dynamics and Control of Aerospace Systems

Aerospace Department, The Pennsylvania State University *Fall 2021*
Teaching Assistant, AERSP 460 Control of Aerospace Systems

Aerospace Department, The Pennsylvania State University *Fall 2021*
Teaching Assistant, AERSP 413 Aircraft Stability and Control

Department of Electrical Engineering, Universidad de Chile *2016*
Supervised undergrad thesis: Eng. Matias Vidal
Title: "Development and Evaluation of a Communication System for Nano-Satellites"

Department of Electrical Engineering, Universidad de Chile *Fall 2013*
Teaching Assistant, EL5900 Professional Best Practices

Department of Electrical Engineering, Universidad de Chile *Spring 2011*
Teaching Assistant, EL4002 Digital Systems

Department of Electrical Engineering, Universidad de Chile *2010 - 2012*
Teaching Assistant, EL4102 Computer Architecture

PUBLICATIONS

Journals

1. Tomas I. Opazo, Raja Akif Raja Zahirudin, José Palacios, Sven Schmitz and Jack W. Langelaan. "Analytical and Experimental Power Minimization for Fixed-Pitch Coaxial Rotors in Hover", (2022, under revision).
2. Yan, Sihong, Tomas I. Opazo, Jack W. Langelaan, and Jose L. Palacios. "Experimental Evaluation and Flight Simulation of Coaxial-Rotor Vehicles in Icing Clouds." Journal of the American Helicopter Society 65, no. 2 (2020): 1-15. https://doi.org/10.4050/JAHS.65.022011

Conferences

1. Cornelius, J.K., Opazo, T., Schmitz, S., Langelaan, J., Villac, B., Adams, D., Rodovskiy, L. and Young, L., 2021. Dragonfly–Aerodynamics during Transition to Powered Flight. In 77th Annual Vertical Flight Society Forum and Technology Display: The Future of Vertical Flight, FORUM 2021. Vertical Flight Society. ISBN 9781713830016
2. Opazo, Tomas, and Jack W. Langelaan. "Longitudinal control of transition to powered flight for a parachute-dropped multirotor." In AIAA Scitech 2020 Forum, p. 2072. 2020. https://doi.org/10.2514/6.2020-2072
3. Yan, Sihong, Tomas Opazo, Jose Palacios, Jack W. Langelaan, and Louis David Germain. "Experimental evaluation of multi-rotor UAV operation under icing conditions." In Annual Forum Proceedings-AHS International, vol. 2018. American Helicopter Society, 2018.
4. Gonzalez, Carlos, Camilo Rojas, Alex Becerra, Javier Rojas, Tomas Opazo, and Marcos Diaz. "Lessons learned from building the first chilean nano-satellite: The SUCHAI project." (2018). Small Satellite Conference 2018.
5. Roecker, Steven W., Raymond M. Russo, Diana Comte, Daniel Carrizo, Sophie Peyrat, Tomas Opazo, Gerardo Peña et al. "Preliminary Results From the Chile-Illapel Aftershock Experiment (CHILLAX)." In AGU Fall Meeting Abstracts, vol. 2016, pp. S21B-2715. 2016. Bibcode 2016AGUFM.S21B2715R
6. Comte, Diana, Daniel Carrizo, Sophie Peyrat, Raymond M. Russo, Steven W. Roecker, Tomas Opazo, Gerardo Peña et al. "The September 16, 2015 Illapel (Mw 8.3) Earthquake: Comprehensive Analysis from Seismic and Geodetic Observations." In AGU Fall Meeting Abstracts, vol. 2015, pp. S54C-02. 2015. Bibcode 2015AGUFM.S54C..02C