

HERALDO ROZAS

I. Personal Information

Full name: Heraldo Felipe Rozas Ovando

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II. Education

Georgia Institute of Technology

Ph.D. in Industrial Engineering–Systems Informatics and Control

Atlanta, USA

August 2020 - June 2024

Universidad de Chile

M.Sc in Electrical Engineering

Santiago, Chile

April 2019

Universidad de Chile

B.Sc in Electrical Engineering

Santiago, Chile

September 2017

III. Educational Experience

Teaching assistant

1. 3030 - Basic Statistical Methods

August 2020 - May 2021

H. Milton Stewart School of Industrial and Systems Engineering
Georgia Institute of Technology

2. EL4003 Signals and Systems II

March 2018 - July 2018

Department of Electrical Engineering , Universidad de Chile.

3. FI2002 Electromagnetism

August 2016 - December 2016

Department of Physics, Universidad de Chile.

4. EL3002 Applied Electromagnetism

March 2016 - July 2016

Department of Electrical Engineering , Universidad de Chile.

Lab Demonstrator

1. EL5205 Advanced Control Laboratory

August 2017 - December 2017

Department of Electrical Engineering , Universidad de Chile.

IV. Professional Experience

Graduate Research Assistant

August 2020 - Present

NASA's Habitat Optimized for Missions of Exploration-
Space Technology Research Institute (HOME STRI),
Predictive Analytics & Intelligent Systems (PAIS) Research Group
H. Milton Stewart School of Industrial and Systems Engineering
Georgia Institute of Technology

Project Engineer

April 2019- May 2020

Project title: "Development of an Artificial Intelligence Model for Ion-Lithium Battery Performance Optimization in Electric Vehicles"

Department of Electrical Engineering
Universidad de Chile

Research Assistant

August 2016 - June 2020

Fault Diagnosis and Failure Prognosis Laboratory
Department of Electrical Engineering
Universidad de Chile.

V. Research

a. List of Web of Science Journal Publications

1. **Rozas, H.**, Xie, W., and Gebraeel, N., "Data-driven joint optimization of maintenance and spare inventory: A distributionally robust chance-constrained program," *MSOM Informs*, 2023 (*Status: Under Review*).
2. **Rozas, H.**, Xie, W., and Gebraeel, N., "Condition-based maintenance for wind farms using a distributionally robust chance-constrained program," *IEEE Transactions on Power Systems*, 2023 (*Status: Under Review*).
3. Ibrahim, M., **Rozas, H.**, and Gebraeel, N., "An integrated detection-prognostics methodology for components with intermittent faults," *IEEE Transactions on Reliability*, 2023 (*Status: Under Review*).
4. **Rozas, H.**, Basciftci, B., and Gebraeel, N., "Data-driven joint optimization of maintenance and spare parts provisioning for deep space habitats," *Acta Astronautica*, 2023. doi.org/10.1016/j.actaastro.2023.10.028
5. Futalef, J. P., Muñoz-Carpintero, D., **Rozas, H.**, and Orchard, M. E. (2023). An online decision-making strategy for routing of electric vehicle fleets. *Information Sciences*, 625, 715-737. doi.org/10.1016/j.ins.2022.12.108
6. Shi, J., **Rozas, H.**, Yildirim, M., and Gebraeel, N. (2023). A stochastic programming model for jointly optimizing maintenance and spare parts inventory for IoT applications. *IIEE Transactions*, 55(4), 419-431. doi.org/10.1080/24725854.2022.2127164
7. **Rozas, H.**, Muñoz-Carpintero, D., Saéz, D., and Orchard, M. E. (2021). Solving in real-time the dynamic and stochastic shortest path problem for electric vehicles by a prognostic decision making strategy. *Expert Systems with Applications*, 184, 115489. doi.org/10.1016/j.eswa.2021.115489
8. **Rozas, H.**, Troncoso-Kurtovic, D., Ley, C. P., and Orchard, M. E. (2021). Lithium-ion battery State-of-Latent-Energy (SoLE): A fresh new look to the problem of energy autonomy prognostics in storage systems. *Journal of Energy Storage*, 40, 102735. doi.org/10.1016/j.est.2021.102735
9. Díaz, C., Quintero, V., Pérez, A., Jaramillo, F., Burgos-Mellado, C., **Rozas, H.**, and Cárdenas, R. (2020). Particle-filtering-based prognostics for the state of maximum power available in lithium-ion batteries at electromobility applications. *IEEE Transactions on Vehicular Technology*, 69(7), 7187-7200. doi.org/10.1109/TVT.2020.2993949
10. **Rozas, H.**, Jaramillo, F., Perez, A., Jimenez, D., Orchard, M., and Medjaher, K. (2019). "A method for the reduction of the computational cost associated with the implementation of particle-filter-based failure prognostic algorithms". *Mechanical Systems and Signal Processing*. doi.org/10.1016/j.ymsp.2019.106421

b. List of other publications

b.1. List of Conference Publications:

1. Perez, A., **Rozas, H.**, Jaramillo, F., Quintero, V., and Orchard, M. (2019). A simulation engine for the characterization of capacity degradation processes in lithium-ion batteries undergoing heterogeneous operating conditions. In *Annual Conference of the PHM Society* (Vol. 11, No. 1) doi.org/10.36001/phmconf.2019.v11i1.855
2. Perez, A., Quintero, V., Jaramillo, F., **Rozas, H.**, Jimenez, D., Orchard, M., and Moreno, R. (2018). Characterization of the degradation process of lithium-ion batteries when discharged at different current rates. *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, 232(8), 1075-1089, doi.org/10.1177/0959651818774481
3. **Rozas, H.**, Muñoz-Carpintero, D., Perez, A., Medjaher, K., and Orchard, M. (2018). An approach to prognosis-decision-making for route calculation of an electric vehicle considering stochastic traffic information. In the *Fourth European Conference of the Prognostics and Health Management Society 2018* doi.org/10.36001/phme.2018.v4i1.440

4. **Rozas, H.**, Claveria, R. M., Orchard, M. E., and Medjaher, K. (2018). Residual-based scheme for detection and characterization of faults in lithium-ion batteries. *IFAC-PapersOnLine*, 51(24), 200-207. doi.org/10.1016/j.ifacol.2018.09.578
5. Perez, A., Quintero, V., **Rozas, H.**, Jimenez, D., Jaramillo, F., and Orchard, M. (2017). Lithium-ion battery pack arrays for lifespan enhancement. In 2017 CHILEAN Conference on Electrical, Electronics Engineering, Information and Communication Technologies (CHILECON) (pp. 1-5). IEEE. doi.org/10.1109/CHILECON.2017.8229537
6. Pérez, A., Quintero, V., **Rozas, H.**, Jaramillo, F., Moreno, R., and Orchard, M. (2017). Modelling the degradation process of lithium-ion batteries when operating at erratic state-of-charge swing ranges. In 2017 4th international conference on control, decision and information technologies (codit) (pp. 0860-0865). IEEE, doi.org/10.1109/CoDIT.2017.8102703

b.2. Conference Activities and Academic Service:

1. *Presenter*, presentation title: “Condition-Based Maintenance for Wind Farms Using a Distributionally Robust Chance Constrained Program”, INFORMS 2023, Phoenix, USA.
2. *Presenter*, presentation title: “Joint Optimization of Maintenance Scheduling and Spares Provisioning in Deep Space Habitats”, IISE 2023 Annual Conference, New Orleans, USA.
3. *Poster presenter*, poster title: “Joint Optimization of Maintenance Scheduling and Spares Provisioning in Deep Space Habitats”, SmartHab Workshop 2022, San Antonio, USA.
4. *Session chair*, session title: “Improving Efficiency and Resilience of Power System Infrastructure”, INFORMS 2023, Phoenix, USA.
5. *Session chair*, session title: “Optimization in Quality and Reliability”, IISE 2023 Annual Conference, New Orleans, USA.
6. *Reviewer*: IEEE Transactions on Reliability, IISE Transactions, International Journal of Prognostics and Health Management, and Prognostics and Health Management Conference 2018 and 2019.

b.3. Research Projects:

1. *Graduate Research Assistant (August 2020 - Present)*, Project title: “NASA STRI: HOME: Space Technology Research Institute for Deep Space Habitat Design”, Georgia Institute of Technology, USA.
2. *Research Assistant (March 2018 - May 2020)*, Project title: “FONDEF IDeA ID18I10379–Development of an Artificial Intelligence Model for Optimizing the Performance of Lithium-Ion Batteries in Electric Vehicles”, Universidad de Chile, Chile.
3. *Research Assistant (August 2016 - December 2017)*, Project title: “ANID-FONDECYT Project #1170044–Prognostics Performance Metrics based on Bayesian Cràmer-Rao Lower Bounds”, Universidad de Chile, Chile.

VI. Others

a. Awards and Fellowships:

Energy, Natural Resources, and the Environment (ENRE) Student Best Paper Award(2023)

▷ INFORMS 2023

Stewart Fellowship (2020)

▷ Fellowship awarded by Georgia Institute of Technology.

FULBRIGHT Scholarship (2020-2024)

▷ International Scholarship to pursue doctoral studies in the US, awarded by FULBRIGHT CHILE.

CONICYT - Master’s Scholarship (2018)

▷ National Grant to pursue master studies in Chile, awarded by CONICYT.

Distinguished student (2014, 2015, 2016, 2017, 2018)

▷ Recognition awarded by the Schools of Engineering and Sciences of the Universidad de Chile for achieving outstanding performance while pursuing B.Sc or M.Sc.

b. Computing Skills: Python, Matlab, and Simulink.

c. Languages: English (Fluent) and Spanish (Native).