Francisco Jaramillo Montoya

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R⁶ ResearchGate   ⓘD Orcid   in LinkedIn

Estudios

2018   **Doctor en Ingeniería Eléctrica, Universidad de Chile**, Santiago, Chile.

2009   **Ingeniero Civil Electrónico, Universidad de La Frontera**, Temuco, Chile.

Experiencia Laboral Académica

2023 – ⋯   **Centro de Aceleración Sostenible de Electromovilidad (CASE)**, Santiago, Chile.
Subdirector Proyecto Tecnológico 08 (PT-08), *Electric Vehicle Battery State-of-Health and Second-life Assessment.*

Postdoctorado

2024 – ⋯   **Universidad de Los Andes**, Santiago, Chile.
Proyecto **Tecnologías Avanzadas TA23i10055**, *Sistema Integrado de Monitoreo Estructural Predictivo para Aerogeneradores.*

2022 – 2023   **Universidad de Los Andes**, Santiago, Chile.
Proyecto **FONDEF ID17I20140**, *Sistema de monitoreo para diagnóstico y pronóstico de daño estructural en turbinas eólicas.*

2021   **Universidad de Chile**, Santiago, Chile.
Proyecto **FONDEF ID19I10363**, *Sistema abierto experto para apoyar la gestión de recursos hídricos mediante monitoreo de bajo costo en tiempo real de aguas superficiales y subterráneas.*

2020 – 2021   **Universidad de Chile**, Santiago, Chile.
Proyecto **FONDEF ID18I10379**, *Desarrollo de un modelo de inteligencia artificial para la optimización del rendimiento de baterías ion-litio en vehículos eléctricos.*

2018 – 2020   **Universidad de Los Andes**, Santiago, Chile.
Proyecto **FONDEF ID17I10140**, *Sistema de monitoreo para diagnóstico y pronóstico de daño estructural en turbinas eólicas.*

Miembro de comisión evaluadora

2023   **Universidad de Chile**, Santiago, Chile.
Miembro Comisión y Profesor Co-Guía Tesis de Magister en Ciencias de la Ingeniería y Trabajo de Título Ingeniero Civil Eléctrico. Tema: *Plataforma abierta de detección de anomalías y aprendizaje automático para apoyo a la toma de decisiones en la gestión de aguas subterráneas..*

Universidad de Chile, Santiago, Chile.
Miembro Comisión y Profesor Co-Guía Tesis de Magister en Ciencias de la Ingeniería y Trabajo de Título Ingeniero Civil Eléctrico. Tema: *Modelamiento del sistema electromecánico de un Aerogenerador.*

2013   **Universidad de Chile**, Santiago, Chile.
Miembro Comisión Trabajo de Título Ingeniero Civil Electricista. Tema: *Análisis de fallas en maquinaria minera.*

2012   **Universidad de Chile**, Santiago, Chile.
Miembro Comisión Trabajo de Título Ingeniera Civil Electricista. Tema: *Análisis de falla en sistemas de detonación electrónicos y eléctricos.*

Experiencia Laboral Académica (continued)

Cursos dictados

2010 – 2011 🔖 **Universidad Católica de Temuco**, Temuco, Chile.
Física I.
Laboratorio de Electricidad y Electrónica.

2007 🔖 **Universidad Católica de Temuco**, Temuco, Chile.
Laboratorio de Física General II.

Ayudantías

2014 – 2017 🔖 **Universidad de Chile**, Santiago, Chile.
Diagnóstico y Pronóstico de Fallas.
Taller de Diseño.

Experiencia Laboral Empresas

2017 🔖 **DIIT Chile S.A.** Santiago, Chile.
Certificación OTDR y PMD red Fibra Óptica EFE.
Encargado del curso *Entrenamiento en trabajos de fusión y medición de fibra óptica* para personal de planta externa Entel.

2016 🔖 **DIIT Chile S.A.** Santiago, Chile.
Certificación CD/PMD red Fibra Óptica Minera Escondida.

2013 🔖 **DIIT Chile S.A.** Santiago, Chile.
Encargado de capacitación para personal de Telefónica Chile en equipos para fibra óptica EXFO: OTDR y analizadores de CD/PMD.

2012 🔖 **DIIT Chile S.A.** Santiago, Chile.
Supervisor en terreno certificación Red GPON Entel en Temuco y Puerto Montt.

2008–2010 🔖 **DIIT Chile S.A.** Santiago, Chile.
Ingeniero de Soporte.
Soporte para pre y post venta de equipos de telecomunicaciones.
Supervisor para instalación de sistemas contra incendio en termoeléctrica Guacolda.
Supervisor en terreno para certificación de fibra óptica.

2007 🔖 **Celulosa Arauco y Constitución S.A. Planta Nueva Aldea**, Nueva Aldea, Chile.
Trabajo en parada de planta como Técnico Electrónico.
Limpieza y mantenimiento de equipos electrónicos.

Publicaciones Científicas

Journal Articles

1 J. M. Gutiérrez, R. Astroza, **F. Jaramillo**, M. Orchard, and M. Guarini, "Evolution of modal parameters of composite wind turbine blades under short- and long-term forced vibration tests," *Journal of Civil Structural Health Monitoring*, 2024, ISSN: 2190-5479. 🔗 DOI: https://doi.org/10.1007/s13349-024-00773-1.

2 D. Muxica, S. Rivera, M. E. Orchard, C. Ahumada, **F. Jaramillo**, F. Bravo, J. M. Gutiérrez, and R. Astroza, "Autonomous sensor system for low-capacity wind turbine blade vibration measurement," *Sensors*, vol. 24, no. 6, 2024. 🔗 DOI: https://doi.org/10.3390/s24061733.

3. E. Paccha-Herrera, **F. Jaramillo-Montoya**, W. R. Calderón-Muñoz, D. Tapia-Peralta, B. Solórzano-Castillo, J. Gómez-Peña, and J. Paccha-Herrera, "A particle filter-based approach for real-time temperature estimation in a lithium-ion battery module during the cooling-down process," *Journal of Energy Storage*, vol. 94, p. 112 413, 2024, ISSN: 2352-152X. ᴅᴏɪ: https://doi.org/10.1016/j.est.2024.112413.

4. C. Muñoz, J. Huircan, **F. Jaramillo**, and Á. Boso, "Calibration of Sensor Network for Outdoor Measurement of PM2.5 on High Wood-Heating Smoke in Temuco City," *Processes*, vol. 11, no. 8, 2023, ISSN: 2227-9717. ᴅᴏɪ: https://doi.org/10.3390/pr11082338.

5. C. Antileo, **F. Jaramillo**, O. Candia, A. Osorio, C. Muñoz, J. Farías, J. B. Proal-Nájera, Q. Zhang, and S.-U. Geissen, "Long-term nitrite-oxidizing bacteria suppression in a continuous activated sludge system exposed to frequent changes in pH and oxygen set-points," *Journal of Environmental Management*, vol. 318, p. 115 545, 2022, ISSN: 0301-4797. ᴅᴏɪ: https://doi.org/10.1016/j.jenvman.2022.115545.

6. **F. Jaramillo**, J. M. Gutiérrez, M. Orchard, M. Guarini, and R. Astroza, "A Bayesian approach for fatigue damage diagnosis and prognosis of wind turbine blades," *Mechanical Systems and Signal Processing*, vol. 174, p. 109 067, 2022, ISSN: 0888-3270. ᴅᴏɪ: https://doi.org/10.1016/j.ymssp.2022.109067.

7. C. Díaz, V. Quintero, A. Pérez, **F. Jaramillo**, C. Burgos-Mellado, H. Rozas, M. E. Orchard, D. Sáez, and R. Cárdenas, "Particle-Filtering-Based Prognostics for the State of Maximum Power Available in Lithium-Ion Batteries at Electromobility Applications," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 7, pp. 7187–7200, 2020, ISSN: 1939-9359. ᴅᴏɪ: https://doi.org/10.1109/TVT.2020.2993949.

8. F. Lindow, C. Muñoz, **F. Jaramillo**, R. H. Bishop, J. B. Proal-Nájera, and C. Antileo, "Active biomass estimation based on ASM1 and on-line OUR measurements for partial nitrification processes in sequencing batch reactors," *Journal of Environmental Management*, vol. 273, p. 111 150, 2020, ISSN: 0301-4797. ᴅᴏɪ: https://doi.org/10.1016/j.jenvman.2020.111150.

9. M. Martínez-Ledesma and **F. Jaramillo Montoya**, "Performance evaluation of the particle swarm optimization algorithm to unambiguously estimate plasma parameters from incoherent scatter radar signals," *Earth, Planets and Space*, vol. 72, no. 1, p. 172, 2020, ISSN: 1880-5981. ᴅᴏɪ: https://doi.org/10.1186/s40623-020-01297-w.

10. E. Paccha-Herrera, W. R. Calderón-Muñoz, M. Orchard, **F. Jaramillo**, and K. Medjaher, "Thermal Modeling Approaches for a LiCoO2 Lithium-ion Battery—A Comparative Study with Experimental Validation," *Batteries*, vol. 6, no. 3, p. 40, 2020, ISSN: 2313-0105. ᴅᴏɪ: https://doi.org/10.3390/batteries6030040.

11. H. Rozas, **F. Jaramillo**, A. Perez, D. Jimenez, M. M. E. Orchard, and K. Medjaher, "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*, vol. 135, p. 106 421, 2020, ISSN: 0888-3270. ᴅᴏɪ: https://doi.org/10.1016/j.ymssp.2019.106421.

12. D. Leottau, K. Lobos-Tsunekawa, **F. Jaramillo**, and J. Ruiz-del-Solar, "Accelerating decentralized reinforcement learning of complex individual behaviors," *Engineering Applications of Artificial Intelligence*, vol. 85, pp. 243–253, 2019, ISSN: 09521976. ᴅᴏɪ: https://doi.org/10.1016/j.engappai.2019.06.019.

13. **F. Jaramillo**, M. Orchard, C. Muñoz, C. Antileo, D. Sáez, and P. Espinoza, "On-line estimation of the aerobic phase length for partial nitrification processes in SBR based on features extraction and SVM classification," *Chemical Engineering Journal*, vol. 331, no. Supplement C, pp. 114–123, 2018, ISSN: 1385-8947. ᴅᴏɪ: https://doi.org/10.1016/j.cej.2017.07.185.

14. **F. Jaramillo**, M. Orchard, C. Muñoz, M. Zamorano, and C. Antileo, "Advanced strategies to improve nitrification process in sequencing batch reactors - A review," *Journal of Environmental Management*, vol. 218, pp. 154–164, 2018, ISSN: 0301-4797. ᴅᴏɪ: https://doi.org/10.1016/j.jenvman.2018.04.019.

15 A. Perez, V. Quintero, **F. Jaramillo**, H. Rozas, D. Jimenez, M. Orchard, and R. Moreno, "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*, vol. 232, no. 8, pp. 1075–1089, 2018. ☍ DOI: https://doi.org/10.1177/0959651818774481.

16 M. A. Diaz, J. C. Zagal, C. Falcon, M. Stepanova, J. A. Valdivia, M. Martinez-Ledesma, J. Diaz-Peña, **F. Jaramillo**, N. Romanova, E. Pacheco, M. Milla, M. Orchard, J. Silva, and F. P. Mena, "New opportunities offered by Cubesats for space research in Latin America: The SUCHAI project case," *Advances in Space Research*, vol. 58, no. 10, pp. 2134–2147, 2016, ISSN: 0273-1177. ☍ DOI: https://doi.org/10.1016/j.asr.2016.06.012.

17 C. Antileo, H. Medina, C. Bornhardt, C. Muñoz, **F. Jaramillo**, and J. Proal, "Actuators monitoring system for real-time control of nitrification–denitrification via nitrite on long term operation," *Chemical Engineering Journal*, vol. 223, no. 0, pp. 467–478, 2013, ISSN: 1385-8947. ☍ DOI: https://doi.org/10.1016/j.cej.2013.02.079.

Conference Proceedings

1 C. Muñoz, C. Antileo, P. Cachaña, and **F. Jaramillo**, "Optimal Operation Points for Long-Term Partial Nitrification in CSTR for Dairy Wastewater Treatment: A Simulation Study," in *2023 IEEE Conference on AgriFood Electronics (CAFE)*, 2023, pp. 177–181. ☍ DOI: https://doi.org/10.1109/CAFE58535.2023.10291524.

2 A. Valverde, V. Quintero, **F. Jaramillo**, A. Perez, and M. Orchard, "Understanding the Effect on the State of Health of a Lithium-ion Battery Caused by Charging at a High Current Rate," 2, vol. 56, 2023, pp. 11 930–11 935. ☍ DOI: https://doi.org/10.1016/j.ifacol.2023.10.608.

3 A. Perez, **F. Jaramillo**, C. Baeza, M. Valderrama, V. Quintero, and M. Orchard, "A Particle-Swarm-Optimization-Based Approach for the State-of-Charge Estimation of an Electric Vehicle When Driven Under Real Conditions," 1, vol. 13, 2021, pp. 1–11. ☍ DOI: https://doi.org/10.36001/phmconf.2021.v13i1.3013.

4 **F. Jaramillo**, M. Valderrama, V. Quintero, A. Pérez, and M. Orchard, "Time-of-Failure Probability Mass Function Computation Using the First-Passage-Time Method Applied to Particle Filter-based Prognostics," in *Annual Conference of the Prognostics and Health Management Society 2020*, 2020, p. 11.

5 H. Rozas, F. Tamssaouet, **F. Jaramillo**, K. T. P. Nguyen, K. Medjaher, and M. Orchard, "Comparison of different models of future operating condition in Particle-Filter-based Prognostic Algorithms," 2, vol. 53, 2020, pp. 10 336–10 341. ☍ DOI: https://doi.org/10.1016/j.ifacol.2020.12.2770.

6 J. M. Gutierrez, R. Astroza, J. Abell, C. Soto, **F. Jaramillo**, M. Guarini, and M. Orchard, "Experimental System and Damage Identification of Small-Scale Wind Turbine Blades," in *Experimental Vibration Analysis for Civil Engineering Structures*, 2019, p. 8.

7 A. Pérez, H. Rozas, **F. Jaramillo**, V. Quintero, and M. Orchard, "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*, 2019, p. 9.

8 V. Quintero, A. Perez, **F. Jaramillo**, C. Estevez, and M. Orchard, "Procedure for selecting a transmission mode dependent on the state-of-charge and state-of-health of a lithium-ion battery in wireless sensor networks with energy harvesting devices," in *Proceedings of the Annual Conference of the Prognostics and Health Management Society, PHM*, 2018, ISBN: 9781936263295.

9 C. Reyes, **F. Jaramillo**, B. Zhang, C. Kulkarni, and M. Orchard, "Just-in-time Point Prediction Using a Computationally-efficient Lebesgue-sampling-based Prognostic Method," in *Proceedings of the Annual Conference of the PHM Society*, 2018, p. 8.

10 **F. Jaramillo**, V. Quintero, A. Pérez, and M. Orchard, "Spatio-temporal probabilistic modeling based on Gaussian mixture models and neural gas theory for prediction of criminal activity," in *Annual Conference of the Prognostics and Health Management Society 2017*, 2017, p. 8.

11 A. Pérez, V. Quintero, H. Rozas, **F. Jaramillo**, R. Moreno, and M. Orchard, "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)*, 2017, pp. 860–865. DOI: https://doi.org/10.1109/CoDIT.2017.8102703.

12 A. Pérez, V. Quintero, H. Rozas, D. Jimenez, **F. Jaramillo**, and M. Orchard, "Lithium-ion battery pack arrays for lifespan enhancement," in *2017 CHILEAN Conference on Electrical, Electronics Engineering, Information and Communication Technologies (CHILECON)*, Oct. 2017, pp. 1–5. DOI: https://doi.org/10.1109/CHILECON.2017.8229537.

13 S. Seria, V. Quintero, P. Espinoza, A. Pérez, **F. Jaramillo**, M. Benavides, and M. Orchard, "Energy management of electric bicycles given a traveling elevation profile," in *Proceedings of the Annual Conference of the Prognostics and Health Management Society, PHM*, 2017, ISBN: 9781936263059.

14 P. Flores, M. Vergara, P. Fuentes, **F. Jaramillo**, D. Acuna, A. Perez, and M. Orchard, "Modeling and Prediction of Criminal Activity Based on Spatio-Temporal Probabilistic Risk Functions," in *Annual Conference of the Prognostics and Health Management Society 2015*, 2015.

15 C. Tampier, A. Pérez, **F. Jaramillo**, V. Quintero, M. Orchard, and J. Silva, "Lithium-Ion Battery End-of-Discharge Time Estimation and Prognosis based on Bayesian Algorithms and Outer Feedback Correction Loops: A Comparative Analysis," in *Annual Conference of the Prognostics and Health Management Society 2015*, 2015, pp. 1–14.

Participación en Eventos

Congresos/Conferencias

2022 43trd International Summer School of Automatic Control. September, 5-9, 2022, Grenoble, France.

2019 Wind Energy Science Conference (WESC) 2019, Cork, Ireland.

2015 Annual Conference of the Prognostic and Health Management Society 2015, October 19th-24th, San Diego, CA, USA.

2014 XXI Congreso de la Asociación Chilena de Control Automático (ACCA), realizado en la Universidad Central de Chile. Santiago, Chile.

2013 IX Escuela de Verano Latinoamericana en Inteligencia Computacional (EVIC), realizado en la Universidad de La Frontera. Temuco, Chile.

2005 Congreso INGELECTRA, realizado en la Facultad de Ingeniería de La Universidad de Chile. Santiago, Chile.

Pasantías

2019 Proyecto REDES 170031, pasantía por 3 meses en L'École Nationale d'Ingénieurs de Tarbes (ENIT), Tarbes, Francia.

Becas y Premios

Becas

2014 Beca Doctorado Nacional. Comisión Nacional de Investigación Científica y Tecnológica (CONICYT).

2012 Beca de inglés. Corporación de Fomento de la Producción (CORFO).

Becas y Premios (continued)

2000   ▌   Beca Juan Gómez Millas. Gobierno de Chile, Ministerio de Educación.

Premios

2013   ▌   Tercer lugar concurso de posters en Inteligencia Computacional, IX Escuela de Verano Latinoamericana en Inteligencia Computacional (EVIC).

Habilidades Técnicas

Lenguajes   ▌   Inglés nivel Intermedio (Escrito y Hablado).
Español (Nativo).

Software   ▌   Windows, Microsoft Office (Word, Excel, PowerPoint), LaTeX , Matlab, Simulink.

Programación   ▌   Matlab, Python.