Gabriel San Martín

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES **Los Angeles, CA, USA**

Ph.D. student in Civil and Environmental Engineering | Sep 2021 – Sep 2025 (Expected) | GPA 4.00/4.00

- Focus Area: Sensor Placement Optimization in Critical Infrastructure Networks.
- Research Interests: Critical Infrastructure, Quantum Computing, Sensor Placement Optimization.
- Advisor: Prof. Enrique López Droguett.

UNIVERSITY OF CALIFORNIA, LOS ANGELES **Los Angeles, CA, USA**

M.S student in Civil and Environmental Engineering | Sep 2021 – June 2023 (Expected) | GPA 4.00/4.00

- Major: Structural Mechanics.
- Courses: CEE235A Advanced Structural Analysis, M230A Linear Elasticity, CEE244 Structural Reliability, M237A Dynamics of Structures, CEE235B Finite Element Analysis of Structures, CEE232 Theory of Plates and Shells, CEE239 Elementary Structural Dynamics, CEE246 Structural Response to Ground Motions, CEE135B Introduction to Finite Element Methods.

UNIVERSITY OF CHILE **Santiago, Chile**

M.S in Mechanical Engineering | Mar 2018 – Mar 2020 | GPA 4.00/4.00

- Thesis Title: “Semi-Supervised Learning with Temporal Variational Auto-Encoders for the Diagnosis of Failure Severities and the Prognosis of Remaining Useful Life”.

UNIVERSITY OF CHILE **Santiago, Chile**

Engineering Degree in Mechanical Engineering | Mar 2012 – Jan 2018 | GPA 3.70/4.00

- Thesis Title: “Variational Auto-Encoder Model for the Identification of Failure Modes in Engineering Systems”.

PROFESIONAL EXPERIENCE

ACCENTURE **Santiago, Chile**

Data Scientist Associate Manager | Apr 2021 – Aug 2021

- Managed a team responsible for designing, developing, and implementing a digital tool for the optimization of copper production in BHP Chile.

UNIT – Chilean Artificial Intelligence Consulting Company **Santiago, Chile**

Data Scientist | Apr 2020 – Apr 2021

- Developed multiple data-driven tools to deliver user recommendations for copper extraction and production in BHP Chile.

RESEARCH EXPERIENCE

UNIVERSITY OF CALIFORNIA, LOS ANGELES **Los Angeles, CA, USA**

Research Assistant at The B. John Garrick Institute for Risk Sciences | Sep 2021 - Present

- Research and develop quantum computing approaches for risk and resilience applications.
- Assist in the technical aspects of grant proposal writing.

UNIVERSITY OF CHILE **Santiago, Chile**

Research Assistant at the Smart Reliability & Maintainability Integration Laboratory | Mar 2017 – Mar 2020

- Research and development of time-aware Variational Auto-Encoder models to perform condition-based monitoring of industrial machinery.

TEACHING EXPERIENCE

UNIVERSITY OF CALIFORNIA, LOS ANGELES **Los Angeles, CA, USA**

Teacher Assistant (TA)

- Spring 2023 - CEE110 Introduction to Probability and Statistics for Engineers
- Fall 2022 – M20 Introduction to Computer Programming with MATLAB

- Spring 2022 – CEE110 Introduction to Probability and Statistics for Engineers
- Winter 2022 – CEE298 Reliability Methods for Complex Systems

UNIVERSITY OF CHILE **Santiago, Chile**

Teacher Assistant (TA)

- Spring 2019 – Professional Diploma: Big Data Analytics in Maintenance and Reliability.
- Fall 2019 – Deep Learning for Prognosis and Diagnosis Applications.
- 2013 – 2019 – Multiple undergraduate courses such as Solid Mechanics, Computer Science for Engineering Applications, and Cinematic and Dynamic of Mechanisms, among others.

SCHOLARSHIPS AND AWARDS

- ASME SERAD IMECE 2021 Student Paper Competition - Honorable Mention Award
- Best Graduate - M.S Mechanical Engineering Program - University of Chile
- CONYCIT - Chilean Government Full Scholarship Award for M.S studies
- Outstanding Engineering Student Award - University of Chile

SELECTED PUBLICATIONS

JOURNAL PAPERS

[1] Correa-Jullian, C., Cofre-Martel, S., **San Martin, G.**, Lopez Droguett, E., de Novaes Pires Leite, G., & Costa, A. (2022). Exploring Quantum Machine Learning and Feature Reduction Techniques for Wind Turbine Pitch Fault Detection. Energies, 15(8), 2792.
[2] San Martin, G., & Droguett, E. L. (2022). Temporal Variational Auto-Encoders for Semi-Supervised Remaining Useful Life and Fault Diagnosis. IEEE Access, 10, 55112-55125.
[3] San Martin, G., Lopez Droguett, E., Meruane, V., & das Chagas Moura, M. (2019). Deep variational auto-encoders: A promising tool for dimensionality reduction and ball bearing elements fault diagnosis. Structural Health Monitoring, 18(4), 1092-1128.

CONFERENCE PAPERS

[1] San Martin, G., Lopez Droguett, E. (2023). Quantum Inference for Reliability Assessment. The 69th Annual Reliability and Maintainability Symposium (RAMS) (Proceedings in preparation)
[2] San Martin, G., Parhizkar, T., Nguyen, H., López Droguett, E. (2023). Quantum-Enhanced Reliability Assessment of Power Networks in Response to Wildfire Events. The 69th Annual Reliability and Maintainability Symposium (RAMS) (Proceedings in preparation)
[3] San Martin, G., Lopez Droguett, E. (2022). Exploring Kernel-Based Quantum Machine Learning for Prognosis and Health Management Applications. The 32nd European Safety and Reliability Conference (ESREL 2022) (Proceedings in preparation)
[4] San Martin, G., Parhizkar, T., López Droguett, E. (2022). Quantum Fault Trees. The 16th Probability Safety Assessment and Management Conference (PSAM16) (Proceedings in preparation)
[5] San Martin, G., Lopez Droguett, E. (2022). Quantum Machine Learning for Health State Diagnosis and Prognostics. The 68th Annual Reliability and Maintainability Symposium (RAMS) (Proceedings in preparation)
[6] San Martin, G., Lopez Droguett, E. (2021). Semi-Supervised Learning with Temporal Variational Auto-Encoders for Reliability. The 31st European Safety and Reliability Conference (ESREL 2021) (Proceedings in preparation)

TALKS AND CONFERENCE PRESENTATIONS

- Tutorial presentation at the 69th Annual Reliability and Maintainability Symposium (RAMS23)
  - Quantum Computing for Reliability and Maintainability: A Practical Approach
- Paper presentations at the 69th Annual Reliability and Maintainability Symposium (RAMS23)
  - Quantum Inference for Reliability Assessment
  - Quantum-Enhanced Reliability Assessment of Power Networks in Response to Wildfire Events
- Paper presentations at the 32nd European Safety and Reliability Conference (ESREL 2022) [Virtual]
  - Exploring Kernel-Based Quantum Machine Learning for Prognosis and Health Management Applications
- Paper presentations at the 31st European Safety and Reliability Conference (ESREL 2021) [Virtual]
  - Semi-Supervised Learning with Temporal Variational Auto-Encoders for Reliability