

# Jokin Alcibar, Ph.D. Candidate

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🌐 jalcibar

🎓 Google Scholar



## Education

- 2023 – Present    📖 **Ph.D. Candidate, Mondragon University** in Artificial Intelligence.  
Thesis title: *Bayesian Physics-Guided Neural Networks for Uncertainty Quantification in Battery Health Assessment*.  
Supervisors: Dr. Joxe Aizpurua (Google Scholar) and Dr. Ekhi Zugasti (Google Scholar).
- 2022 – 2023    📖 **M.Sc. Computer Science, Mondragon University** in Data analysis, cybersecurity and cloud computing.  
Thesis title: *Study and analysis of Machine Learning and Artificial Intelligence algorithms for an induction cooktop*.
- 2009 – 2014    📖 **B.Sc. Engineering, University of the Basque Country** in Automation and Industrial Electronics.  
Thesis title: *Cooling system for an electric vehicle propulsion system*.

## Relevant Professional Education

- 2024    📖 Probabilistic Deep Learning with TensorFlow 2 - Imperial College London
- 2023    📖 Nordic ProbAI 2023 - Nordic Probabilistic AI School

## Employment History

- 2023 – Present    📖 **PhD Candidate**, Mondragon University, Electronics & Computer Science Department.
- Developed algorithms for batteries diagnostics and prognostics combining deep learning and physics-based performance models.
  - Designed and implemented Bayesian neural networks for uncertainty quantification in battery health assessment, combining probabilistic inference and deep learning to improve diagnostic and prognostic accuracy and reliability.
- 2015 – 2021    📖 **Industrial Software Developer**, Fagor Arrasate S. Coop.
- Developed and maintained software for industrial automation systems, focusing on press lines and metal forming processes.
  - Implemented real-time control algorithms for precise synchronization of multiple axes in complex machinery.
  - Led the servo motor programming team, developing advanced control algorithms for precise positioning and synchronization in high-speed press lines.

## Employment History (continued)

2014 – 2015

📌 **Power Electronics Engineer**, APEL S.A.

- Developed control algorithms for grid-connected inverters, ensuring compliance with grid codes and maximizing energy efficiency.
- Implemented digital control systems using DSPs and microcontrollers for various power electronic converters.
- Conducted thermal analysis and optimized heat management systems for high-power density converters.

## Research Projects

2023 – 2024

📌 **MECACOGNIT**, Cognitive mechatronic systems. WP dedicated to probabilistic prognostics models for robust RUL predictions of batteries. Funded by the Basque Government.

2022 – 2023

📌 **MECAPRES**, Ultra-precise, reliable, and coordinated mechatronics for Industry 4.0. WP dedicated to prognostics of batteries in autonomous drones. Funded by the Basque Government.

## Research Publications

### Journal Articles

- 1 J. Alcibar, J. I. Aizpurua, and E. Zugasti, “A Hybrid Probabilistic Battery Health Management Approach for Robust Inspection Drone Operations,” *Engineering Applications of Artificial Intelligence*, [Under Review \(2nd round of peer review\)](#). 🔗 URL: <https://arxiv.org/abs/2405.00055>.

### Conference Proceedings

- 1 J. Alcibar, J. I. Aizpurua, and E. Zugasti, “Towards a Probabilistic Fusion Approach for Robust Battery Prognostics,” in *PHM Society European Conference*, vol. 8, Jun. 2024, p. 13. 🔗 DOI: 10.36001/phme.2024.v8i1.3981. (visited on 07/15/2024).
- 2 J. Alcibar, J. I. Aizpurua, E. Zugasti, C. Alonso-Montes, and I. Diez, “Towards a Probabilistic Error Correction Approach for Improved Drone Battery Health Assessment,” in *Proceeding of the 33rd European Safety and Reliability Conference*, Research Publishing Services, 2023, pp. 1862–1868, ISBN: 978-981-18807-1-1. 🔗 DOI: 10.3850/978-981-18-8071-1\_P179-cd. (visited on 10/29/2023).

## Skills

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| Languages | 📌 Native proficiency in Basque and Spanish; good competency in English (reading, writing, and speaking). |
| Coding    | 📌 Java, Python, R, Matlab, GIT, SQL, XML/XSL, $\LaTeX$ , ...   |
| Databases | 📌 MySQL, PostgreSQL, HSQL, SQLite.   |
| Misc.     | 📌 Academic research, teaching, training, consultation, $\LaTeX$ typesetting and publishing.              |