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# Marina Aguilar

PhD. In Computer Science  
Industrial Engineer



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## Research Experience

**PhD Researcher** (Nov 2023 – currently)

University of Malaga (UMA)

Line of research: Data-driven Optimization Under a Dynamic Context.

**Postdoc. Orientation Period** (Jul 2023 – Oct 2023)

University of the Basque Country (UPV/EHU)

Line of research: Project for the healthy ageing.

Attendance at Entrepreneurship Fair Startup Olé 2023 in Salamanca with the research group stand.

Obtaining Ekintzaile in BIC Araba 2023 with the e-osasun aisIA project.

Finalist Manuel Laborde Werlinden Prize 2023 with the e-osasun aisIA project.

**PhD student (FPI grant)** (Nov 2019 – Jul 2023)

University of the Basque Country (UPV/EHU)

**PhD in Computer Science**

**Member of the research group Computational Intelligence Group (CIG)**

Dissertation: Contributions to LiDAR based SLAM and Computational Ethology.

Mentions: Cum Laude and international PhD.

- **International stay in Institut de Neurobiologie de la Méditerranée (Marsella)**

Participation in data acquisition process with a multi-camera system and a piezoelectric platform to record rodent movements.

Video pre-processing with ffmpeg, MATLAB and Python.

Signal processing and behavior quantification with MATLAB.

Application of supervised Artificial Intelligence algorithms for behavior classification (CNN, MLP, SVM). Application of unsupervised algorithms to search for behavioral patterns (k-means, spectral clustering).

- **Other activities and awards**

Participation as a scientific reviewer committee in the International Congress on Artificial Intelligence and Industry 4.0 towards a 5.0 Society.

Attendance at Science Week 2019 with the 'Robotic Dialogues' stand.

Finalist in the Manuel Laborde Werlinden Prize 2022 with the e-JanztIA project.

Second prize in the INIZIA 2023 call for 'New innovative initiatives' with the e-JanztIA project.



## Research activity

### Journal

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- Marina Aguilar-Moreno, Manuel Graña, On registration methods for SLAM with low resolution LiDAR sensor, Logic Journal of the IGPL, Volume 31, Issue 4, August 2023, Pages 751–761, <https://doi.org/10.1093/jigpal/jzac037>
- Graña M, Aguilar-Moreno M, De Lope Asiain J, Araquistain IB, Garmendia X. (2020). Improved Activity Recognition Combining Inertial Motion Sensors and Electroencephalogram Signals. Int J Neural Syst. 2020;30(10): 2050053. <https://doi.org/10.1142/S0129065720500537>

### Book chapters

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- Aguilar-Moreno, M., Graña, M. (2020). An Hybrid Registration Method for SLAM with the M8 Quanergy LiDAR. In: de la Cal, E.A., Villar Flecha, J.R., Quintián, H., Corchado, E. (eds) Hybrid Artificial Intelligent Systems. HAIS 2020. Lecture Notes in Computer Science(), vol 12344. Springer, Cham. [https://doi.org/10.1007/978-3-030-61705-9\\_3](https://doi.org/10.1007/978-3-030-61705-9_3).
- Aguilar-Moreno, M., Graña, M. (2021). A Comparison of Registration Methods for SLAM with the M8 Quanergy LiDAR. In: Herrero, Á., Cambra, C., Urda, D., Sedano, J., Quintián, H., Corchado, E. (eds) 15th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO 2020). Advances in Intelligent Systems and Computing, vol 1268. Springer, Cham. [https://doi.org/10.1007/978-3-030-57802-2\\_79](https://doi.org/10.1007/978-3-030-57802-2_79)

- Aguilar-Moreno, M., Graña, M. (2023). Computational Ethology: Short Review of Current Sensors and Artificial Intelligence Based Methods. In: Iliadis, L., Maglogiannis, I., Alonso, S., Jayne, C., Pimenidis, E. (eds) Engineering Applications of Neural Networks. EANN 2023. Communications in Computer and Information Science, vol 1826. Springer, Cham. [https://doi.org/10.1007/978-3-031-34204-2\\_2](https://doi.org/10.1007/978-3-031-34204-2_2)
- Aguilar-Moreno, M., Graña, M. (2023). Phenotype Discrimination Based on Pressure Signals by Transfer Learning Approaches. In: Rojas, I., Joya, G., Catala, A. (eds) Advances in Computational Intelligence. IWANN 2023. Lecture Notes in Computer Science, vol 14135. Springer, Cham. [https://doi.org/10.1007/978-3-031-43078-7\\_12](https://doi.org/10.1007/978-3-031-43078-7_12)

## Congress

- 2nd Basque Conference on Cyber Physical Systems and Artificial Intelligence (BCCSAI) 2023: *On deep learning for computational ethology.*
- 17th International Work-Conference on Artificial Neural Networks (IWANN2023): *Phenotype Discrimination Based on Pressure Signals by Transfer Learning Approaches.*
- 24th International Conference on Engineering Applications of Neural Networks (EANN 2023): *Computational Ethology: short review of current sensors and artificial intelligence-based methods.*
- Basque Conference on Cyber Physical Systems and Artificial Intelligence (BCCSAI) 2022: *AI and data science in animal ethology.*
- 15th International Conference on Soft Computing Models in Industrial and Environmental Applications (SOCO 2020): *A comparison of registration methods for SLAM with the M8 Quanergy LiDAR.*
- 15th International Conference Hybrid Artificial Intelligent Systems (HAIS 2020): *A hybrid registration method for SLAM with the M8 Quanergy LiDAR.*
- Póster en XXXIX Jornadas de Automática 2018: *Modelado cinemático y simulación realista del manipulador móvil de bajo coste Turtlebot2 + Widow-X en ROS.*



## Education

### PhD in Computer Science

University of the Basque Country (UPV/EHU)

Dissertation: Contributions to LiDAR based SLAM and Computational Ethology.

### Master's Degree in Mechatronics Engineering

University of Malaga (UMA)

TFM: Modeling and simulation of a Widow-X robotic arm and a Turtlebot2 mobile platform using ROS and Gazebo.  
[GitHub repository.](#)

### Industrial Engineering

University of Malaga (UMA)

PFC: Simulation of a wind energy system with permanent magnet generator and maximum power point tracking (MPPT).

### Other

University of the Basque Country (UPV/EHU) - Institut de Neurobiologie de la Méditerranée

- **Training Activities:**
  - Taller Mindfulness para la gestión del estrés
  - Webinar: How to write papers
  - Course Machine Learning Onramp (MATLAB)
  - Webinar: Effective Public Speaking
  - Webinar: Planning for an academic conference
  - Course Herramientas y Recursos de Información para Doctorado
  - Course Cómo enfrentarse a una entrevista en prensa, radio y TV: taller virtual de divulgación científica para personal investigador
  - Webinar: Planning and managing the research process
  - Webinar: Branding yourself as a researcher
  - Webinar: Common Scientific writing mistakes made by non-native English writers
  - First Bilbao Workshop on Algorithmic Fairness 2021
  - Course Core Writing
  - BIC Gipuzkoa Course: De una idea a una empresa de producto sanitario
  - BIC Gipuzkoa Course: Investigación de mercado y estrategia de marketing
  - BIC Gipuzkoa Course: Plan de Negocio CANVAS
  - Biacruces Course: Unsupervised deep learning of human brain diffusion magnetic resonance imaging tractography data
- **Attendance at seminars and courses at INMED:**
  - Altérations de la dynamique du traitement neuronal de l'information dans l'épilepsie.
  - Role of the immune system in adaptive and maladaptive neural circuit plasticity after brain injury.
  - Assessing the mechanism and the functional impact of activity-dependent synaptic plasticity.
  - Distance coding in dorsal hippocampal CA1: impact of septal inactivation and deep/superficial update.
  - Representation of navigational goals in the orbitofrontal cortex.

- Influence des stéréotypes de genre sur les performances cognitives et les décisions de recrutement.
- Uncovering the hidden wealth of physiological information in field potentials.
- Quantifying rabies connectivity data - pitfalls and recommendations.
- The Neuroarcheology concept: Predicting and treating brain disorders.
- From neurons to behavior in Hydra.
- Multimodal and multiscale imaging to shed a new light on biological processes.
- Distributed motor and choice information in the mouse posterior cortex.
- The Consequences of Sex Bias in Preclinical Research.
- The Consequences of Sex Bias in Preclinical Research.



## Work experience

### Software Analyst (Ene 2017 – Oct 2019)

AVANADE S.L.U.

- Mobile application programmer and analyst for the banking sector. Responsible for Android application development and maintenance and third part SDK integration. Management of the work of other colleagues (review, testing and planning) and assistance in User Interface with the client.  
Xamarin + MvvmCross + Git + AppCenter technology for application deployment.  
SCRUM + Visual Studio Team Services.  
Presentations for company events and informative talk about MvvmCross.
- Back-end analyst and programmer for aerospace company. Web application development, testing and supervision and client assistance.  
.Net + C# + MVP + SQL/ PLSQL in Oracle + Javascript + Infragistic + TFS.  
Training courses: Blue Prism, Unit Test and Effective Meeting Management.

### Teacher at FECyT Science Campus (Jul 2016)

University of Malaga (UMA)

Robotics and programming classes for children in 4<sup>th</sup> ESO and 1<sup>st</sup> Bachillerato. In these classes they learned to program LegoNXT robots in C++ and how to work with different sensors and actuators.

### Industrial Organization Engineer (Nov 2014 – May 2015)

Malaga City Hall

In rehabilitation project, planning and prevention of occupational risks for operations with machinery and at heights by a team of 30 workers.

### Outages Analyst (Citius grant) (Sep 2012 – Sep 2013)

ENDESA

Analyst of MV and LV incidents and preparation of reports on electrical faults in Eastern Andalusia. Improvement studies to reduce service interruption time during outages. Remote training given by the Autonomous University of Madrid (UAM).



## Languages and Software

**English:** C1 Certified by the Official Language School of San Sebastian.

**German:** B1 Certified by the Official Language School of Malaga.

C/C++/C#   Python   *MATLAB/Simulink*   *Sonic Visualizer*   Spike   *ffmpeg*   *CUDA toolkit*   Bonsai  
Singularity   Gazebo   ROS-Indigo   R-viz   *VirtualBox*   MeshLab   Arduino  
Xamarin-Android/iOS   Git   *VSTS*   MVP   .Net   ASP.Net   TFS   Oracle-SQL   JavaScript  
EES   Mathematica   Adobe-Illustrator