

Antonio García GarvÍ

PHD STUDENT IN AUTOMATION, ROBOTICS AND INDUSTRIAL COMPUTER SCIENCE

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Experience

Universidad Politécnica de Valencia

Valencia, Spain

PREDOCTORAL RESEARCHER

Dec. 2021 - Now

- Development of the PhD thesis "Design, development and evaluation of computer vision based techniques for automation of experiments with C. elegans", funded by the Ministry of Universities (ref FPU20/02639).
- Graduate Teaching Assistant for courses in the Department of Systems and Automation Engineering.
- Co-advisor of bachelor thesis.

MRC Laboratory of Medical Sciences, Imperial College London

London, UK

VISITING RESEARCHER

March. 2024 - June. 2024

- Research stay at Dr Andre Brown's Behavioral Phenomics group (<https://tierpsy.com/>), funded by the Ministry of Universities (ref EST24/00169) to carry out the project: "Classification of C. elegans movement patterns using artificial neural networks for the discovery of new treatments for rare diseases".

Universidad Politécnica de Valencia

Valencia, Spain

RESEARCHER

Oct. 2020 - Dec. 2021

- Design, development, evaluation and documentation of new deep learning-based hardware to perform automatic handling and/or inspection of C. elegans nematodes.

Universidad Politécnica de Valencia

Valencia, Spain

COLLABORATION GRANT

Oct. 2018 - Jul. 2019

- Design, development, evaluation of deep learning algorithms for object classification.

Education

Universidad Politécnica de Valencia

Valencia, Spain

PHD IN AUTOMATION, ROBOTICS AND INDUSTRIAL COMPUTER SCIENCE

Sept. 2021 - Now

- Competitive predoctoral fellowship "Formación de Profesorado Universitario" (University Professor Training) from the Spanish Government (FPU20/02639)

Universidad Politécnica de Valencia

Valencia, Spain

MSc IN AUTOMATION AND INDUSTRIAL COMPUTING

Sept. 2019 - Sept. 2020

- 2 distinctions.

Universidad Politécnica de Valencia

Valencia, Spain

BSc IN INDUSTRIAL ELECTRONICS AND AUTOMATION ENGINEERING

Sept. 2015 - Jul. 2019

- 8 distinctions.

Skills

Programming	Python, MATLAB, C, JAVA
Machine Learning Libraries	Pytorch, MATLAB, Scikit-learn, Pandas
Languages	Spanish (mother tongue), English (B2 Cambridge)

Grants

2024	Ayudas complementarias de movilidad destinadas a beneficiarios FPU 2024, Ministerio de Ciencia, Innovación y Universidades
2020	FPU, Ministerio de Ciencia, Innovación y Universidades
2018	Collaboration grant 2018/42/00001, Ministerio de Educación y Formación Profesional

Publications

JOURNAL ARTICLES

Layana-Castro, P.E., Kounakis, K., **García-GarvÍ, A.**, Gkikas, I., Tsiamantas, I., Tavernarakis, N., Sánchez-Salmerón, A.J., 2025. SegElegans: Instance segmentation using dual convolutional recurrent neural network decoder in Caenorhabditis elegans microscopic images. Computers in Biology and Medicine. DOI:10.1016/j.combiomed.2025.110012

- García-Garvía, A.**, Layana-Castro, P.E., Puchalt, J.C., Sánchez-Salmerón, A.J., 2023. Automation of Caenorhabditis elegans lifespan assay using a simplified domain synthetic image-based neural network training strategy. Computational and Structural Biotechnology Journal.DOI:10.1016/j.csbj.2023.10.007
- Escobar-Benavides, S, **García-Garvía, A.**, Layana-Castro, P.E., Sánchez-Salmerón, A.J., 2023. Towards generalization for Caenorhabditis elegans detection. Computational and Structural Biotechnology Journal.DOI:10.1016/j.csbj.2023.09.039
- Layana-Castro, P.E., **García-Garvía, A.**, Navarro-Moya, F., Sánchez-Salmerón, A.J., 2023. Skeletonizing Caenorhabditis elegans Based on U-Net Architectures Trained with a Multi-worm Low-Resolution Synthetic Dataset. International Journal of Computer Vision.DOI:10.1007/s11263-023-01818-6
- Layana-Castro, P.E., **García-Garvía, A.**, Sánchez-Salmerón, A.J., 2023. Automatic segmentation of Caenorhabditis elegans skeletons in worm aggregations using improved U-Net in low-resolution image sequences. Heliyon, vol. 9, no 4. DOI: 10.1016/j.heliyon.2023.e14715.
- García-Garvía, A.**, Layana-Castro, P.E., Sánchez-Salmerón, A.J., 2022. Analysis of a C. elegans lifespan prediction method based on a bi-modal neural network and uncertainty estimation. Computational and Structural Biotechnology Journal. 21 - 2023, pp. 655 - 664.DOI: 10.1016/j.csbj.2022.12.033
- Navarro-Moya, F., Puchalt, J.C., Layana-Castro, P.E., **García-Garvía, A.**, Sánchez-Salmerón, A.J., 2022. A new training strategy for spatial transform networks (STN's). Neural Computing and Applications. 34 - 12, pp. 10081 - 10092.DOI: 10.1007/s00521-022-06993-0
- Layana-Castro, P.E., Puchalt, J.C., **García-Garvía, A.**, Sánchez-Salmerón, A.J., 2021. Multi-Tracker Based on a Modified Skeleton Algorithm.Sensors. 21 - 16, pp.5622 - 5643.DOI: 10.3390/s21165622
- García-Garvía, A.**, Puchalt, J.C., Layana-Castro, P.E., Sánchez-Salmerón, A.J., 2021. Towards Lifespan Automation for Caenorhabditis elegans Based on Deep Learning: Analysing Convolutional and Recurrent Neural Networks for Dead or Live Classification. Sensors. 21 - 14, pp. 4943 - 4960.DOI: 10.3390/s21144943

CONFERENCES

- Puchalt, J.C., Talbi, Z., Escobar-Benavides, S., Penyaranda-Jara, J.J., Layana-Castro, P.E, **García-Garvía, A.**, Sánchez-Salmerón, A.J., 2024. A modular system for automating Caenorhabditis elegans assays. 2024. IX Spanish Worm Meeting. Sevilla, Spain
- Layana-Castro, P.E., **García-Garvía, A.**, Kounakis, K., Gkikas, I., Tsiamantas, I., Tavernarakis, N., Sánchez-Salmerón, A.J., 2023. EleanSeg: Whole body instance segmentation using improved U-Net in Caenorhabditis elegans microscopic images. 2023. 24th International C. elegans Conference. Glasgow, Scotland
- Rico, E.J., Layana-Castro, P.E., **García-Garvía, A.**, Sánchez-Salmerón, A.J., 2022. Caenorhabditis elegans detection using YOLOv5 and Faster R-CNN networks. 2nd International Conference on Optimization, Learning Algorithms and Applications (OL2A 2022).Póvoa de Varzim, Portugal
- Puchalt, J.C., **García-Garvía, A.**, Layana-Castro, P.E., Sánchez-Salmerón, A.J., 2022. Towards a fully automated device based on deep learning for Caenorhabditis elegans lifespan. 2023. VIII Spanish Worm Meeting. Logroño, Spain
- García-Garvía, A.**, Layana-Castro, P.E., Puchalt, J.C., Sánchez-Salmerón, A.J., 2022. Automation of Caenorhabditis elegans lifespan assay using deep learning CV4Animals: Computer Vision for Animal Behavior Tracking and Modeling. New Orleans, USA
- Layana-Castro, P.E., **García-Garvía, A.**, Navarro-Moya, F., Sánchez-Salmerón, A.J., 2022. Skeletonizing Caenorhabditis elegans based on deep learning. CV4Animals: Computer Vision for Animal Behavior Tracking and Modeling. New Orleans, USA