

Carles Garcia-Cabrera

Education

- 2019 - 2023 **Ph.D. in Machine Learning**, *Generalizable Cardiac MR analysis with Deep Learning*, Pending of Examination ML-LABS - SFI CENTRE FOR RESEARCH TRAINING IN MACHINE LEARNING, Dublin City University, Dublin.
- 2019 - 2022 **Master in Advanced Telecommunications Technologies**, *Machine Learning*, Polytechnic University of Catalonia, Barcelona.
- 2012 - 2018 **Bachelor's degree in Telecommunications Engineering**, *Audiovisual Systems*, Polytechnic University of Catalonia, Barcelona.
- 2018 **Bachelor's Thesis**, The University of Auckland, Auckland, New Zealand.
Automatic Ventricle Segmentation Using CNNs in Cardiac MRI

Experience

- Nov 2021 - **Applied Research Intern**, MEDIS MEDICAL IMAGING, Leiden, The Netherlands.
March 2022 R&D Cardiac MRI innovation, Customer support.
- June 2018 - **Research Intern**, AUCKLAND MRI RESEARCH GROUP, The University of Auckland.
January 2019 Artificial Intelligence research and software development.
- January 2016 **Research Assistant**, SIGNAL THEORY DEPARTMENT, Polytechnic University of Catalonia.
- June 2018 IT support to researchers. System administrator and app developer.
- April 2014 - **Intern**, SPECIFIC PROJECTS BUREAU, The Polytechnic University of Catalonia.
January 2016 IT support. Grant proposal support and translation. Multimedia support.
- 2014 **IT Technician**, BARCELONA MOBILE WORLD CONGRESS 2014.

Fellowships & Awards

- 2020 **Winning team** at the IBM Shielding Federated Learning Against Attacks Hackathon.
- 2019 **Ph.D. Scholarship** ML-LABS - SFI Centre for Research Training in Machine Learning.
- 2019 **Master Scholarship** at UPC by the Telecommunication Engineering School.

Publications

- 2023 "Cardiac MRI Dataset Balancing using Atlas Deformations and Style Transfer". Accepted as an abstract at the Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) and under-review at the Radiology journal.
- 2023 "Cardiac Magnetic Resonance Phase Detection Using Neural Networks". Irish Conference on Artificial Intelligence and Cognitive Science (AICS).
- 2023 "Cardiac MRI reconstruction from undersampled k-space using double-stream IFFT and a denoising GNA-UNET pipeline". Medical Image Computing and Computer Assisted Intervention (MICCAI).
- 2022 "Cardiac Segmentation using Transfer Learning under Respiratory Motion Artifacts". International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).
- 2021 "Semi-supervised learning of cardiac MRI using image registration". Irish Machine Vision and Image Processing Conference (IMVIP).

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Presentations

- 2023 **Oral talk:** "Cardiac MRI Dataset Balancing using Atlas Deformations and Style Transfer" at the Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA). Chicago, The United States of America.
- 2023 **Poster:** "Cardiac Magnetic Resonance Phase Detection Using Neural Networks". Irish Conference on Artificial Intelligence and Cognitive Science (AICS). Letterkenny, Ireland.
- 2022 **Poster:** "Cardiac Segmentation using Transfer Learning under Respiratory Motion Artifacts". International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). Singapore.
- 2021 **Poster:** "Semi-supervised learning of cardiac MRI using image registration". Irish Machine Vision and Image Processing Conference (IMVIP). Dublin, Ireland.

Teaching

- 2022 **Advisor:** (1) Master's Thesis (University College Dublin).
- 2022 - 2023 **Tutoring.** Image Processing & Analysis (Dublin City University).
- 2019 - 2023 **Teaching Assistance.** Mobile Robotics (Dublin City University).
- 2021 - 2022 **Teaching Assistance.** Embedded Systems (Dublin City University).
- 2020 - 2021 **Teaching Assistance.** Algorithms for Engineers (Dublin City University).

Other Professional Experience, NGO and Philanthropy

- Since 2015 **Freelance Lighting Engineer and Operator.**
- 2013 – 2018 **Vice President & Treasurer,** *Telecogresca - Cultural Association*, Barcelona.
- 2016 – 2017 **Director & Founder,** *COSINE Project*, Bhimphedi, Nepal.
- 2015 **Co-founder,** *Clean Water for Bali*, Karangasem, Indonesia.

Computer Skills

- Advanced PYTHON: Pytorch, Numpy, Matplotlib, Seaborn, Pandas, TorchIO, Nibabel, Napari.
L^AT_EX, TIKZ.
- Intermediate PYTHON: TensorFlow, Keras, OpenCV, ITK.
BASH, JAVA, MATLAB, Video and Image recording and editing.
- Basic C++, HTML.

Languages

Catalan, Spanish and English.

Research and Professional Interests

- o **Machine learning in Medical Imaging:** Multi-modality, foundational models, attention, generative models, federated learning, explainable/interpretable AI, digital twins, ethical AI.
- o **Medical Data Modalities:** MRI, ECG, CT, Ultrasound, Genomics.