XAVIER BELTRAN URBANO

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EDUCATION

University of Pennsylvania
Bioengineering PhD student *Aug. 2024 – Present*
Current Research: Developing AI applications in neuroimaging, focused on Alzheimer's disease and related dementias. Ongoing projects include generative models and AI-based quality control methods.

University of Girona, University of Burgundy, University of Cassino
MSc Student in Erasmus Mundus Joint Master Degree in Medical Imaging and Applications (MAIA) *Sept. 2022 – June 2024*
Relevant Courses: Machine and Deep Learning and Advanced Image Analysis

University of Girona
BEng in Biomedical Engineering *Sept. 2018 – June. 2022*
Relevant Courses: Image Analysis and Processing and Neuroscience and Neuroimaging

RESEARCH EXPERIENCE

Detrelab at University of Pennsylvania, *Research Engineer Intern* *Jan. 2024 – August. 2024*
- Analyzed Arterial Spin Labeled (ASL) perfusion magnetic resonance imaging (MRI) as a non-invasive method for imaging regional CBF.
- Developed a deep learning approach to automate ASL CBF quality assessment, enabling more reliable perfusion imaging in clinical and research workflows.

R&D Department of icometrix, *Research Engineer Intern* *July 2023 – Oct. 2023*
- Analyzed stroke brain imaging data using CT perfusion maps from a multicenter dataset.
- Developed an innovative deep learning-based post-processing approach (Accuracy: 93%) to remove stroke CT perfusion maps's artifacts.

ViCOROB Group of Research, *Biomedical Engineer Intern* *Jan. 2022 – June 2022*
- Utilized both unsupervised algorithms and Convolutional Neural Networks (CNN) to perform brain tumor segmentation (Accuracy: 83%) from MRI data.
- Successfully created a 3D model representing the patient's skull and tumor to enhance the preoperatives for brain surgery.

ViCOROB Group of Research, *Biomedical Engineer Intern* *June 2021 – Sept. 2021*
- Engaged in various machine learning and deep learning projects with a primary focus on computer vision and medical imaging.
- Successfully developed a melanoma detector through the application of a range of machine learning algorithms (Accuracy: 72%).

PUBLICATIONS AND TECHNICAL POSTERS

- **X.B. Urbano,** K.R. Jobson, S. Li, M. Taso, I.M. Nasrallah, L. Xie, D.A. Wolk, S. Dolui, J.A. Detre, for the Alzheimer's Disease Neuroimaging Initiative, "SynthPET: A 3D Generative AI approach for FDG-PET image synthesis from MRI and ASL data" (**Manuscript being prepared)**
- **X.B. Urbano**, M. Taso, I.M. Nasrallah, Z. Wang, J.A. Detre, S. Dolui, "QEI-Net: A Deep learning-based automated quality evaluation index for ASL CBF Maps" (**Accepted as power-pitch presentation in the ISMRM 2025 Conference in Honolulu, Hawaii**) [link]
- **X.B. Urbano**, M. Taso, I.M. Nasrallah, Z. Wang, J.A. Detre, S. Dolui, "QEI-Net: A Deep learning-based automated quality evaluation index for ASL CBF Maps" (**Accepted as an oral presentation the ISMRM Workshop on Perfusion MRI**) [link]
- **X.B. Urbano**, A.D.Permana, "Edge Detection In Medical Ultrasound Images Using Adjusted Canny Edge Detection Algorithm." [link]
- A.D.Permana, **X.B. Urbano** , "An Adaptive ECG Noise Removal Process Based on Empirical Mode Decomposition (EMD)." [link]
- *Bachelor thesis*, "NeuroPrint: Revolutionizing Neurosurgical Planning with AI-Driven 3D Brain Mapping", By **X.B.Urbano**, Department of computer vision and robotics (VICOROB), University of Girona, June 2022. [link to the summary]

PROJECTS DEVELOPED

- **A Hybrid Approach for Brain Tissue Segmentation: Integrating Gaussian Mixture Models with Atlas-based and Tissue Modeling Techniques** | *Python*
- **Brain Tissue Segmentation using Expectation Maximization (EM) algorithm for Gaussian Mixture Models (GMM)** | *Python*
- **Mammogram Mass Detection and Classification |** *Python, Scikit-Learn and OpenCV*
- **Alzheimer's Disease Classification with MRI and Gene Expression Data |** *Python and R*

LEADERSHIP EXPERIENCE

Student representative of the seventh cohort of MAIA students, *Delegate* *Sept. 2023 – June 2024*
- Interacted as an intermediary between students and program administrators, advocating for the interests of their cohort and facilitating communication and programme enhancements.

Biomedical engineering mentoring program, *Mentor* *Sept. 2019 – June 2021*
- Assisted first-year bachelor students in academic and non-academic related.

AWARDS AND RECOGNITIONS

- **The Peer Choice Award** by the Penn Nursing Smarter Care Datathon (*selected by participants as Best Project*) *2025*

- **The ISMRM Summa Cum Laude Merit Award** (*Top 5% of accepted abstracts*) *2025*
- **Finalist in the MAIA Alzheimer's Classification Challenge** by the Italian National Research Council & University of Cassino *2023*
- **Twice awarded with the prestigious INTHERAPI Graduate School Scholarship** by the University of Bourgogne *2022*, *2023*
- **Erasmus Mundus Joint Master Consortium Grant** by the University of Girona *2022*

PROFESSIONAL DEVELOPMENT AND CERTIFICATIONS

- **Course in Fundamental Neuroscience for Neuroimaging** by Johns Hopkins University, Coursera *2023*
- **Course in AI for Medical Diagnosis** by DeepLearning.AI, Coursera *2023*
- **Immersion course in English specialized in Health and Life Science** by UIMP *2022*

TECHNICAL / LANGUAGE SKILLS

Languages: English (Speak, Read, Write), Spanish (Native speaker), Catalan (Native speaker)
Programming/Scripting Languages: Python (Pytorch and Tensorflow), Java, R, MATLAB, HTML, LaTeX, Arduino, LabVIEW, SQL
Software Packages: Qt Designer, 3DSlicer, RStudio, SPM12, FSL, ITK-SNAP, Photoshop, Microsoft Office, UltiMaker Cura