

XAVIER BELTRAN URBANO

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EDUCATION

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 – Expected 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, Visiting Scholar (Upcoming)

Jan. 2024 – July. 2024

- Analyze Arterial Spin Labeled (ASL) perfusion magnetic resonance imaging (MRI) as a non-invasive method for imaging regional CBF.
- Develop an approach based on deep learning to generate automated indices for evaluating the quality of CBF maps.

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, Undergraduate Thesis Project

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, M.Z.Amin**, "A Novel Automatic Ecography process for Pregnant Woman using a Collaborative Robot." [\[link\]](#)
- 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 [\[LINK\]](#)

- Enhancing Brain Tissue Analysis: A 2D and 3D CNN Ensemble Approach for MRI Segmentation** | Python
- A Skin Lesion Classification Approach Using Deep Learning on the ISIC 2020** | Python
- Image registration of chest CT volumes: 4DCT DIR-Lab Challenge** | Python and elastix
- A Hybrid Approach for Brain Tissue Segmentation: Integrating Gaussian Mixture Models with Atlas-based and Tissue Modeling Techniques** | Python
- Development of a Probabilistic Brain Atlas and Tissue Probability Models** | Python
- A Skin Lesion Classification Approach Using Deep Learning on the ISIC 2020** | 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 – Present

- 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

- Finalist in the MAIA ISIC 2020 Binary Classification Challenge** by the University of Girona 2024
- 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 (Deep learning using Tensorflow/Keras), Java, R, MATLAB, HTML, LaTeX, Arduino, LabVIEW, SQL

Software Packages: Qt Designer, 3DSlicer, RStudio, SPM12, FSL, ITK-SNAP, Photoshop, Microsoft Office, UltiMaker Cura