Lara Amatouri

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Education

- Master of Science in Biomedical Engineering
  University of Crete, Greece- 2024 - present
  - **Thesis Title: Physics-Informed Machine Learning Approaches for the Estimation of Cuffless Blood Pressure using ECG and PPG for Wearable Devices**
    - Part I- Application Grade Thesis (Submitted with a 10/10 Grade)
    - Part II- Research and Specialization Thesis (Ongoing)
- Bachelor of Science in Biomedical Sciences
  Lebanese International University, Lebanon- 2020 - 2023

Work Experience

- **Student Researcher Institute of Computer Science, Foundation for Research and Technology – Hellas (ICS-FORTH) Heraklion, Crete, Greece | June 2025 - Present**

  - Preprocessing and quality filtering of ECG and PPG signals from large clinical databases (PulseDB, VitalDB, AuroraBP)
  - Extraction of morphological, temporal and spectral features
  - Feature analysis using SHAP, correlation studies and tree-based pruning
  - Machine learning models: Random Forest, XGBoost, SVR, Ridge Regression, Lasso Regression, ANN
  - Evaluation using MAE, RMSE, R2 , ICC, Pearson r, Bland-Altman, 10-fold cross validation and LOPO cross validation
  - Training and evaluation of classification models for hypertension staging across surgical patient populations and non surgical patient populations
  - Modeling physiological relationships between ECG/PPG features and blood pressure
  - Benchmarking against baseline machine learning models on unseen subjects
  - Development of physics-informed machine learning or deep learning model integrating cardiovascular equations *(in progress)*
  - Incorporation of physics-based constraints into the model architecture and loss function *(in progress)*
  - Implementation of personalized modeling using subject specific embeddings and domain adaptation *(in progress)*
  - External validation on unseen subjects *(in progress)*

- **Scientific Translator & Editor - Department of Biology, University of Crete | October 2025 - May 2026**

  - Translated a scientific welfare assessment framework for European sea bass (Dicentrarchus labrax) from English into Arabic published by the University of Crete under the Horizon Europe Programme Cure4Aqua
  - Edited Arabic subtitles for associated multimedia content

Certifications & Academic Service

- IOP Peer Review Excellence, IOP Publishing, June 2026
- IOP Open Data Excellence, IOP Publishing, June 2026
- Technical Program Committee (TPC) Reviewer, 1st International Workshop on eXplainable AI for the Internet of Things (XAIoT 2026), Larnaca, Cyprus, March 2026

Volunteering

- Volunteer for the Emergency and Medical Team- Lebanese Red Cross, 2022 till 2024

Technical Skills

- Programming: Python

Languages

- Native in Arabic Language
- Proficient in English language