

Hamza El Massaoudy

Trustworthy Medical AI | Multimodal Learning | External Validation

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SUMMARY

M.Eng. student in Computer Science and Technology at NUIST, working on trustworthy medical AI. Research combines multimodal learning, dataset audits and external validation, with reproducible software and careful analysis of model failure. Current thesis studies AF detection with ECG foundation models under distribution shift.

RESEARCH INTERESTS

External validation and distribution shift; shortcut learning and dataset audits; calibration and selective prediction; multimodal learning; explainability with clearly stated limitations.

EDUCATION

M.Eng. in Computer Science and Technology | NUIST

2025 - 2027

Nanjing University of Information Science & Technology. Expected June 2027. GPA: 3.69/4.0.

B.Eng. in Computer Science and Technology | Dalian Polytechnic University

2021 - 2025

Dalian, China. Taught in English.

MANUSCRIPT

Wen X., El Massaoudy H. (corresponding author). Multimodal Classification of Primary Liver Tumors on Multiphase CT: Internal Performance, Acquisition Artifacts, and Limited External Transportability. *Journal of Intelligent Medicine and Healthcare*.

Under revision.

RESEARCH EXPERIENCE

Liver CT pipeline and external validation [Public code]

2025 - 2026

- Built and released a reproducible Python ML pipeline (v2.4.2) with pytest, GitHub Actions CI, smoke tests and release validation.
- Audited 1,112 scans and isolated acquisition artifacts confounded with class. Verified the CNN's reliance on these artifacts through counterfactual tests.
- Stress-tested the model on 203 external patients and analyzed acquisition shift as a source of failure.

Trustworthy AF detection with ECG foundation models

Sep 2026 - present

- Studies confidence-based lead selection and deferral to human review under distribution shift. Supervisor: Wen Xuezhi.
- Compares frozen ECGFounder and ECG-JEPA encoders with a ResNet1D baseline using selective prediction.
- Develops on PTB-XL and plans external evaluation on CPSC2018 and Georgia data with electrode-motion noise stress tests. Results are not yet public.

Trustworthy Lead Selection and Deferral for Atrial Fibrillation Detection with ECG Foundation Models under Distribution Shift

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Academic CV continued

EXPERIENCE

gethsk | Co-founder

Jan 2026 - present

- Co-founded an HSK learning app in development. Design learning paths and courses and implement the supporting code.

AsiaScholar | Full-Stack Developer and Technical Coordinator (Intern)

Nov 2024 - Jun 2025

- Led development and maintenance of the agency website and built an internal operations system, coordinating technical delivery across teams.

Self-employed | Freelance Web Developer

2023 - 2025

- Built a PHP/MySQL Product Management System for invoicing, orders, payments and analytics, sold more than 100 times in Morocco, Saudi Arabia and the UAE.
- Delivered an e-commerce system with online checkout and a Java/Spring Boot/SQL student management system for École Al Faraj, Taza.

SELECTED SOFTWARE PROJECT

Explainable HCC survival prediction [Public code]

2026

- Built a Python package and command-line interface with a local Streamlit demo, pytest tests on synthetic data, pre-commit and ruff.
- Implemented leakage-safe nested cross-validation with training-only calibration and threshold selection. Documented methods and limitations in model and data cards.

SKILLS

Medical imaging: Multiphase CT, MONAI 3D CNNs, PyRadiomics, LightGBM, DICOM/NIfTI, SimpleITK.

ECG and trustworthy AI: ECG foundation models, ResNet1D, frozen-encoder transfer learning, noise robustness, selective prediction, calibration, Grad-CAM.

Evaluation: Leakage-safe nested cross-validation, held-out tests, DeLong tests, multiple-testing correction, permutation importance, model and data cards.

Python and ML: Python, PyTorch, GPU training, scikit-learn, NumPy, pandas, SciPy, Matplotlib, TensorFlow/Keras.

Engineering: pytest, GitHub Actions CI, pre-commit, Git, Linux, Python packaging; Docker (coursework only).

Software: Django, Spring Boot, Flask, Java, JavaScript, PHP, MySQL, PostgreSQL, Streamlit.

AWARDS

Longshan Scholarship, First Class, NUIST (2026 - 2027).

SELECTED CERTIFICATIONS

AI for Medical Diagnosis, DeepLearning.AI / Coursera (March 2026).

Supervised Machine Learning: Regression and Classification, DeepLearning.AI and Stanford (February 2026).

HSK Level 4 and HSKK Intermediate (January 2026).

LANGUAGES

Arabic and Amazigh (Native), English (C1), Chinese (HSK 4), French (B1-B2).

EARLIER EDUCATION

BTS in Multimedia and Web Design, Lycée Technique de Taza, Morocco (2019 - 2021).