Rachid, Youven Zeghlache

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Google scholar Website

About

Innovative AI Research Engineer with 4+ years of experience developing cutting-edge deep learning solutions for healthcare and computer vision applications.

Expert in generative AI, longitudinal learning, and explainable AI with a proven track record of 10+ peer-reviewed publications and successful research-to-production deployments.

With 5 years of experience in teaching in AI and healthcare. Seeking to leverage expertise in AI/ML to drive innovation in the UAE's tech ecosystem.

Research interest

Multi-modal learning, Longitudinal learning, Predictive medicine, Medical imaging, Agentic AI for health.

Education

2021 – 2024 **Ph.D., University of Western Britanny** France, In Medical Image Analysis.

2020 – 2021 **M.Sc. , UPEC, SIM** France, in Images and Signals for Medicine.

2017 – 2020 **Engenering school, École publique d'ingénieurs de la santé et du numérique** France, Computer science for Health.

Employment History

Research

2025-01 – 2026-01 ***Research Engineer:*** *Image Falsification Detection and Classification using Explainable AI, France IMTA*

2021-10 – 2024-12 **Ph.D. Thesis:** Title: *Longitudinal follow-up and multi-modal analysis for prediction of diabetic retinopathy progression using deep learning, France, LATIM*

2020-10 – 2021-02 **Research Intern:** Driver Attention Level Classification using Multimodality and Deep Learning, France, Lissi-UPEC.

2020-03 – 2020-09 **Research Intern:** Cancerous Anomaly Segmentation and Detection on FDG-PET Scans in a Bayesian Framework, France ,CHU-Henri Mondor.

2019-04 – 2019-09 **Research Intern:** Deep Learning in Computer Vision for Head and Neck Bone Segmentation in CT Scans, Germany, DKFZ.

Teaching

2024-2025 **Lecturer** Introduction to AI and machine learning and Predictive AI for maintenance, OPEN campus.

Lecturer Introduction to Agenti AI and RAG for entreprise, OPEN campus.

2023-2024 **Lecturer** Introduction to programming and computer science, computer science department, University of Western Brittany.

Lecturer UE virtual patient deep learning for healtcare, School of Engineering, IMT Atlantique.

Lecturer UE Computer vision for tracking using deep learning, School of Engineering, IMT Atlantique.

2020-2021 **Lecturer** Introduction to machine learning, computer science and technologies for health, EPISEN.

Featured Publications

Journal Articles

1. **R. Zeghlache**, I. Brahim, P.-H. Conze, M. Lamard, M. E. A. Lazouni, Z. A. Elaouaber, L. R. Lazouni, C. Nielsen, A. O. Ahsan, M. Wilms, *et al.*, "Deep learning for retinal degeneration assessment: A comprehensive analysis of the mario amd progression challenge," *arXiv preprint arXiv:2506.02976*, 2025.
2. **R. Zeghlache**, P.-H. Conze, M. E. H. Daho, Y. Li, A. Rezaei, H. Le Boité, R. Tadayoni, P. Massin, B. Cochener, I. Brahim, *et al.*, "L-mae: Longitudinal masked auto-encoder with time and severity-aware encoding for diabetic retinopathy progression prediction," *Computers in Biology and Medicine*, vol. 185, p. 109 508, 2025.
3. M. E. H. Daho, Y. Li, **R. Zeghlache**, H. Le Boité, P. Deman, L. Borderie, H. Ren, N. Mannivanan, C. Lepicard, B. Cochener, *et al.*, "Discover: 2-d multiview summarization of optical coherence tomography angiography for automatic diabetic retinopathy diagnosis," *Artificial Intelligence in Medicine*, vol. 149, p. 102 803, 2024.
4. Y. Li, M. E. H. Daho, P.-H. Conze, **R. Zeghlache**, H. Le Boité, R. Tadayoni, B. Cochener, M. Lamard, and G. Quellec, "A review of deep learning-based information fusion techniques for multimodal medical image classification," *Computers in Biology and Medicine*, p. 108 635, 2024.

Conference Proceedings

1. **R. Zeghlache**, P.-H. Conze, M. El Habib Daho, Y. Li, H. Le Boité, R. Tadayoni, P. Massin, B. Cochener, A. Rezaei, I. Brahim, *et al.*, "Latim: Longitudinal representation learning in continuous-time models to predict disease progression," in *International Conference on Medical Image Computing and Computer-Assisted Intervention*, Springer Nature Switzerland Cham, 2024, pp. 404–414.
2. **R. Zeghlache**, P.-H. Conze, M. E. H. Daho, Y. Li, H. L. Boité, R. Tadayoni, P. Massin, B. Cochener, I. Brahim, G. Quellec, *et al.*, "Longitudinal self-supervised learning using neural ordinary differential equation," in *International Workshop on PRedictive Intelligence In MEdicine*, Springer Nature Switzerland Cham, 2023, pp. 1–13.
3. **R. Zeghlache**, P.-H. Conze, M. E. H. Daho, Y. Li, H. Le Boité, R. Tadayoni, P. Massin, B. Cochener, I. Brahim, G. Quellec, *et al.*, "Lmt: Longitudinal mixing training, a framework to predict disease progression from a single image," in *International Workshop on Machine Learning in Medical Imaging*, Springer Nature Switzerland Cham, 2023, pp. 22–32.
4. **R. Zeghlache**, P.-H. Conze, M. E. H. Daho, R. Tadayoni, P. Massin, B. Cochener, G. Quellec, and M. Lamard, "Detection of diabetic retinopathy using longitudinal self-supervised learning," in *International Workshop on Ophthalmic Medical Image Analysis*, Springer International Publishing Cham, 2022, pp. 43–52.

Patents

1. **R. Zeghlache**, P.-H. Conze, M. El Habib Daho, M. Lamard, and G. Quellec, "Method and apparatus for predicting progression of a pathology, number: Ep23306730.5," 2023.

Skills

Languages	French (native), Strong reading, writing and speaking competencies for English.
Analytical Skills	Signal Processing, Medical Imaging, Image Processing, Machine Learning, Computer Vision.
Coding	Python(proficient), R, Java, C/C++, C#, Matlab, LaTeX.
Agentic Frameworks	LangChain, LangGraph, AutoGen, CrewAI, OpenAI Assistants API, Agentic AI for Health
Web Dev	Html, css, JavaScript, TypeScript, Apache Web Server, Hugo.
Misc.	Academic research, teaching, training, LaTeX typesetting and publishing, Markdown, pandoc.

Academic service

Reviewer

Conference	MICCAI 2024, CLINICAI 2024, MICCAI 2025

Academic service (continued)

Journals
- IEEE TMI, Medical Image Analysis, Biomedical Signal Processing and Control, Computers in Biology and Medicine, Scientific report

Organizer (* principal investigator)

Data challenge 2024
- **Monitoring Age-related Macular Degeneration Progression In OCT**, MICCAI-MARIO*
- **Device-Independent diAbetic Macular edema ONset preDiction**, MICCAI-DIAMOND

Supervision (research intern)

ATSE Yapo Cedric Othniel: Registration of ophthalmic image using deep learning
Arthur Lamard: Segmentation and classification of slamp lamp using deep learning

RISE Website

Tutorials coordinators : Developed educational materials medical imaging and AI to provide equal opportunity

Miscellaneous Experience

Awards and Achievements

2019
- **Winning team of the Hackathon E-Med: Erreurs médicamenteuses**, ANSM
- **Winning team of the Datathon Janssen défi Oncologie**, Janssen Johnson

2022
- **Best paper**, OMIA-MICCAI workshop
- **Third place of the DRAC data challenge**, DRAC-Grand Challenge.

Grants & Funding

2024
- **Evired Project**, $5000 for building a Medical image analysis data challenge (MARIO challenge).
- **ED SVS Doctoral School Grant**, $500 for conference attendance and research dissemination.
- **IBSAM Research Grant**, $500 for advancing research in medical image analysis.

Patents & Intellectual Property

2025
- **Patent Publication**: Method and apparatus for predicting progression of a pathology, European Patent number: EP23306730.5.

References

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