

AZADEH HADADI

Postdoctoral Researcher | AI for Medical Imaging & Digital Twins

France | [Google Scholar](#) · [LinkedIn](#)

Profile

Researcher with a PhD in Computer Science and Signal Processing, specializing in artificial intelligence for medical image analysis, deep learning, and patient-specific anatomical modeling.

Current research focuses on AI-driven cardiovascular image analysis, anatomical segmentation and reconstruction, and digital twin development for thoracic aortic dissection, aiming to generate patient-specific vascular models from clinical CT imaging for digital twin applications.

Previous research includes trustworthy AI, multimodal biomedical data analysis, and real-time intelligent systems, providing a strong foundation for developing robust and clinically applicable AI solutions.

Research Interests

- **AI for Medical Imaging**
- **Medical Image Computing**
- **Anatomical Structure Segmentation**
- **Patient-Specific Digital Twins**
- **Clinical AI**
- **Multimodal Biomedical Data Analysis**
- **Trustworthy Artificial Intelligence**

Education

- **PhD, Computer Science — ENSAM (France) cotutelle with KIT (Germany) | 2021 – 2024**
Thesis: Development of Trustworthy Intelligent Avatars in Virtual Environments.
- **MSc, Computer Vision (Image & Signal Processing) — Université de Bourgogne, France | 2019 – 2021**
Thesis: Automatic Segmentation of the Myocardium from Multi-Modal MRI with Deep Learning.

Honors & Distinctions

- **European Doctorate (Doctorat Européen) Label — ENSAM (2024)**

Research Experience

- **Postdoctoral Researcher — CRMBM (UMR CNRS 7339) & AMSE, Aix-Marseille Université, France (ANR DigiTAD Project) | 2026–Present**
 - Developing AI methods for anatomical segmentation within the DigiTAD project, contributing to patient-specific cardiovascular digital twin development for thoracic aortic dissection.

- Designing deep learning pipelines for cardiovascular CT image segmentation and 3D anatomical reconstruction.
- **Postdoctoral Researcher — LISPEN, ENSAM, France (ANR VIMACO Project, in collaboration with SAFRAN Landing Systems) | 2024–2025**
 - Contributed to the VIMACO (Virtual Maintenance Companion) project, focused on personalized augmented reality for industrial maintenance assistance.
 - Developed and evaluated an augmented reality (AR)-based assistance system for human-in-the-loop industrial maintenance.
 - Designed and conducted user studies, including experimental protocols and quantitative performance evaluation.
 - Processed and analyzed multimodal behavioral and physiological data, including eye-tracking and interaction data.
 - Evaluated adaptive assistance strategies to improve user interaction and task performance in industrial maintenance.
- **Doctoral Researcher — LISPEN, ENSAM, France & IMI, Karlsruhe Institute of Technology (KIT), Germany | 2021 – 2024**
 - Developed machine learning and deep learning approaches for multimodal behavioral and physiological data modeling in human-centered intelligent systems.
 - Investigated human-computer interaction (HCI) and user modeling approaches for adaptive virtual and extended reality environments.
 - Applied topological data analysis, machine learning, and predictive modeling for robust analysis of complex multimodal time-series data.
 - Developed AI frameworks for adaptive intelligent avatars, integrating user state estimation and context-aware adaptation.
 - Designed real-time data processing pipelines and experimental protocols for user-centered evaluation.
- **Master’s Thesis Research Intern — ImViA Laboratory, Université de Bourgogne, France | 2021**
 - Developed a deep learning-based framework for cardiac MRI myocardium segmentation using multimodal clinical datasets.
 - Implemented preprocessing, registration, and annotation pipelines for clinical imaging data (CINEDE dataset – CHU Dijon).
 - Evaluated segmentation performance using medical imaging metrics, including Dice Similarity Coefficient (DSC) and overlap measures.
 - Improved segmentation accuracy by up to 49% compared to baseline methods, demonstrating strong quantitative evaluation and model optimization practices.
 - Developed and validated deep learning methods for cardiac anatomical structure segmentation in MRI.

Publications

Journal Articles

- Mosquera-Rojas, G. E., Ouadah, C., **Hadadi, A.**, Lalande, A., & Leclerc, S.

Automatic Myocardium Segmentation in Delayed-Enhancement MRI with Pathology-Specific Data Augmentation and Deep Learning Architectures.

Algorithms, 2023.

- **Hadadi, A., Chardonnet, J.-R., & Guillet, C.**
Integrating Embodied Artificial Intelligence with Virtual Reality: Enhancing User Experience through Trustworthy Intelligent Avatars.
ACM Transactions on Cyber-Physical Systems (TCPS), 2025.
- **Hadadi, A., Guillet, C., Chardonnet, J.-R., Langovoy, M., Wang, Y., & Ovtcharova, J.**
Prediction of Cybersickness in Virtual Environments using Topological Data Analysis and Machine Learning.
Frontiers in Virtual Reality, 2022.

Conference Proceedings

- Ouadah, C., **Hadadi, A.**, Lalande, A., & Leclerc, S.
Comparison of CNN Fusion Strategies for Left Ventricle Segmentation from Multi-modal MRI.
International Conference on Functional Imaging and Modeling of the Heart (FIMH), Springer, 2023.
- **Hadadi, A.**, Chardonnet, J.-R., Guillet, C., & Ovtcharova, J.
SmartSimVR: An Architecture Integrating Machine Learning and Virtual Environment for Real-Time Simulation Adaptation.
IEEE International Conference on Automation, Robotics and Applications (ICARA), 2024.
- **Hadadi, A.**, Chardonnet, J.-R., Guillet, C., & Ovtcharova, J.
Intelligent Virtual Platform for Real-time Cybersickness Detection and Adaptation.
IEEE International Conference on Artificial Intelligence and Extended and Virtual Reality (AIxVR), 2024.
- **Hadadi, A.**, Chardonnet, J.-R., Guillet, C., & Ovtcharova, J.
Machine Learning Application for Real-Time Simulation Systems.
ACM International Conference on Machine Learning Technologies (ICMLT), 2024.

Teaching Experience

- **Lecturer — LISPEN, ENSAM (Master MTi3D), France | 10/2022 – 11/2022**
 - Delivered a Master-level course on Object-Oriented Programming (C++), with supervision of exercises and student support.

Academic Service

- **Reviewer — Frontiers in Virtual Reality; IEEE VR Conference**

Industry Experience

- **Software Engineer and System Architect | 2008 – 2019**

- Designed and developed large-scale software systems and backend architectures for banking and government applications.
- Built scalable data-intensive systems with expertise in software architecture, performance optimization, and production deployment.

Technical Skills

- **AI & Deep Learning:**
PyTorch, TensorFlow, CNNs, Transformers, encoder-decoder architectures
- **Medical Image Computing:**
CT/MRI preprocessing, segmentation, registration, nnU-Net, ITK-SNAP
- **Programming:**
Python, C++, Java, MATLAB, Docker, Git, Linux