Hugo Correia

Scientific Curriculum Vitae

MSc in Informatics Engineering | HCI Researcher
IEETA / DETI — University of Aveiro

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About

I hold a Master's degree in Computer Science and Engineering from the University of Aveiro (2026), where I also completed my Bachelor's degree in Computer Science (2024). My dissertation, *"In the Eye of the Beholder"*, developed at IEETA (Institute of Electronics and Informatics Engineering of Aveiro), addressed the use of gaze to support the evaluation and analysis of interactive ecosystems.

Between September 2024 and June 2026, I was a research fellow at IEETA under the SENSINGHOME project (Agenda ILLIANCE, funded by the Portuguese Recovery and Resilience Plan, PRR). In this context, I developed BEHOLD, an extensible, hardware-agnostic infrastructure for eye-tracking analysis in multimodal, multi-device interaction evaluation, published at IHIET 2026, and Avalux, a platform supporting the execution of usability tests. I also conducted usability studies with users on seamless panel interfaces, in partnership with Bosch. Earlier, I worked on supporting clinical workflows for cardiac medical image analysis, collaborating with multidisciplinary teams that included cardiologists and biomedical engineers, work published at HCI International 2025.

I am a co-author of book chapters and papers in international conferences in the areas of Human-Computer Interaction, machine learning, and intelligent systems, including work on federated learning applied to healthcare data.

Alongside my research activity, I served as Coordinator of the Computer Science Students' Association (NEI / AAUAv) at the University of Aveiro. There I promoted a broader understanding, among Informatics students, of their role in addressing current societal challenges, through hackathons, technical workshops, outreach activities with secondary schools, and initiatives connecting students with the research community and industry.

Research Interests

Eye Tracking & Gaze Analysis • Usability Evaluation • Multimodal Interaction • Virtual & Extended Reality • Data Engineering • Machine Learning • Software Engineering

Education

My academic path was completed at the University of Aveiro, with a growing focus on human-centred computing and interaction evaluation.

MSc in Informatics Engineering Sep 2024 – Jun 2026
University of Aveiro, Portugal

Final classification: 18/20. Dissertation *"In the Eye of the Beholder: Considering gaze to support the evaluation and analysis of interactive ecosystems"* graded 20/20, supervised by Prof. Samuel Silva and Prof. Bernardo Marques. Coursework included Human-Centered Computing, Virtual and Augmented Reality, Information Visualization, and Multimodal Interaction.

BSc in Computer Science Sep 2021 – Jun 2024
University of Aveiro, Portugal

Final classification: 15.3/20. Final project graded 19/20.

Research Experience

I have had the opportunity to work in several research projects, both through research grants and collaborations. For each of the projects, I summarize the overall intent of the project along with my main roles and contributions.

Research Fellow — SENSINGHOME (Agenda ILLIANCE) Sep 2024 – Jun 2026
IEETA / DETI, University of Aveiro

SENSINGHOME addresses the evaluation of smart home interactive technologies, in partnership with companies such as Maxiplás and Bosch. I designed and developed BEHOLD, a plugin-based, hardware-agnostic framework for gaze-aware evaluation of interactive ecosystems, and Avalux, a platform supporting the execution of usability tests. I also planned and conducted usability studies of Bosch seamless touch-panel interfaces, from protocol design to analysis and reporting.

Research Fellow — CADFACTS (FCT project) 2024 – 2025
IEETA / DETI, University of Aveiro

CADFACTS (*Numerical simulation and functional assessment of coronary artery disease through advanced computed tomography*, PTDC/EMD-EMD/0980/2020) brought together computer science and mechanical engineering teams, including partners such as FEUP and Centro Hospitalar de Vila Nova de Gaia. I contributed to the human-centred design and development of support for clinical workflows in left-ventricular CT image analysis, working directly with clinicians to identify usability issues and propose improvements.

Research Collaborator — VARLab 2025 – 2026
IEETA / DETI, University of Aveiro

Collaboration with the "Prevent2Protect" project team on a platform for the collection of cognition-related measures. I contributed to the design and development of the data collection platform.

Publications

The list below includes my peer-reviewed scientific contributions, published or accepted for publication, followed by work currently under review.

[1] **Correia, H.**, Marques, B., Vale Costa, L., Silva, S. (2026). *BEHOLD: An Extensible Eye-Tracking Infrastructure Supporting Multimodal, Multi-Device Interaction Evaluation.* Human Interaction and Emerging Technologies (IHIET-FS 2026): Future Systems and Design Applications, Vol. 235. doi.org/10.54941/ahfe1007266

[2] Cardoso, L., **Correia, H.**, Marques, B., Dias, P., Silva, S., Sousa Santos, B. (2026). *An Adaptive XR Platform for Multimodal Public Speaking Training and Performance Assessment.* Human Interaction and Emerging Technologies (IHIET-FS 2026): Future Systems and Design Applications, Vol. 235. doi.org/10.54941/ahfe1007283

[3] **Correia, H.**, Cardoso, L., Marques, B., Silva, S., Dias, P., Sousa Santos, B. (2026). *SpeakEase: A Virtual Reality Framework for Public Speaking.* Eurographics 2026, Education Papers. doi.org/10.2312/eged.2

[4] Ferreira, D., **Correia, H.**, Cruz, D., Rosa, J., Oliveira, A., Cotorobai, A., Figueiredo, B., Pacheco, O. (2026). *Trailblazer: A Machine Learning Augmented Destination Management System.* Springer (book chapter). doi.org/10.1007/978-3-032-10721-3_12

[5] **Correia, H.**, Marques, B., Silva, S. (2025). *Open-Source Tools Are Just the Start: A Human-Centred Approach to Supporting Clinical Workflows for Left Ventricular CT Analysis.* HCI International 2025, Springer. doi.org/10.1007/978-3-031-94150-4_23

Under review

[6] Federated learning framework for healthcare (FedRF / FedXGB). Submitted to IEEE SaTML.

Academic Projects

The following projects were developed in research, course, and student-association contexts. For each one I indicate the technologies involved and my specific role within the team.

BEHOLD — Eye-Tracking Analysis Platform 2026
Next.js, TimescaleDB, PostgreSQL, MinIO, LSL • github.com/hugocorreia15/SensingHome

Plugin-based, hardware-agnostic infrastructure for gaze data ingestion, processing, and visualization, validated with a 29-participant Tobii Pro Glasses study.

Role: Sole developer. Conceptualized the architecture, elicited requirements with domain experts, and implemented the full stack, from the plugin abstraction layer and processing pipeline to the web dashboard. Developed as my MSc dissertation.

Avalux — Usability Testing Platform 2026
Next.js • avalux.pt • github.com/hugocorreia15/usertesting

Web platform supporting usability evaluation sessions, with test templates, live session mode, task metrics, error and hesitation logging, interviews, and SUS scoring.

Role: Sole developer. Designed and built the platform, and used it to run the Bosch seamless-panel usability studies within the SENSINGHOME project.

SpeakEase — VR Public Speaking Trainer 2025
Unity, Meta Quest 3, Meta XR SDK, Python

VR framework for public speaking training, with configurable virtual audiences, real-time speech analysis, and analytics dashboards for both trainees and therapists.

Role: Full-stack developer, in a two-student team within an elective Virtual and Augmented Reality course, following a Human-Centered Design methodology. Also contributed to the architecture and the user study. Basis for two 2026 publications.

DGA Detection System 2025
Python, FastAPI, React, Docker • github.com/hugocorreia15/mei_aas_pf

Full-stack cybersecurity system detecting algorithmically generated (botnet/C2) domains, using six ML models (Random Forest, LSTM, XGBoost, Transformer, DistilBERT), a REST backend, a React dashboard, a browser extension, and Prometheus/Grafana monitoring.

Role: Full-stack developer, in a two-student team for the Applied Learning for Security course, under the supervision of Prof. Mário Antunes. Responsible for the full artificial intelligence component, including all models and the pre- and post-processing pipelines, as well as for the browser extension. Currently being prepared for publication.

Quests@NEI — Gamification Platform 2026
Microservices • github.com/NEI-AAUAV/nei-gamification-system

Microservices-based gamification system designed to increase student engagement at NEI / AAUAv, covering authentication, gamification, commerce, and analytics services.

Role: Developed in a four-person team. Conceptualized the system and produced the technical documentation, including personas, user stories, service architecture, and a stateless JWT-based QR code mechanism.

Relay — Personalized Messaging Tool 2026
Next.js • live deployment • github.com/hugocorreia15/relay

Tool for sending personalized bulk messages, with delivery status, read receipts, scheduling, and rate-safety controls.

Role: Personal project. Sole developer.

Events

Events I organized or co-organized, mostly through the Computer Science Students' Association (NEI / AAUAv).

- **DETIHub — DETI Job & Engineering Fair** (2025, 2026). Co-organized by the DETI student associations (NEI, AETTUA, NEECT, NEEETA) together with the department and Inova-Ria, bringing companies, lecturers, and research groups to the students through a company fair, workshops, talks, and pitch sessions.
- **Feira do DETI** — *founder*. Created a marketplace event showcasing and selling products made by local artisans and department students.
- **IT workshops** — organized hands-on technical workshops for students on tools and technologies such as Docker and Kubernetes.
- **Tutoring and doubt-clearing sessions** — ran peer support sessions for courses such as Fundamentals of Programming (FP) and MAS.
- **Cybersecurity awareness workshop** for secondary-school students, covering online safety, phishing, and digital footprint.
- **Semana do Enterro** (2021–2026). Involved across six editions, most recently coordinating the association's themed venue and a programme of roughly 40 events.
- **Sunset d'Engenharias** (2025–2026). Large-scale event organized jointly by the engineering student associations of AAUAv.
- **ThinkTwice Hackathon** (in preparation). Co-organized with AETTUA and NEI-AAUAv, including sponsor outreach and communication with partner associations.
- **Welcome activities for new students** and DETI social events.

Service & Activities

Alongside my studies, I held leadership positions in the Computer Science Students' Association over five consecutive years.

Computer Science Students' Association (NEI / AAUAv) 2021 – 2026
University of Aveiro

- **Coordinator** (2024–2026). Overall coordination of the association, representation in department meetings, and strategic planning. Prepared structured input on student wellbeing during exam periods and on the integration of AI in education.
- **Head of Recreation** (2022–2024). Planning and execution of student events and social activities.
- **Head of Sports** (2021–2022). Organisation and management of the association's sports activities.

Also compiled a database of 830+ Portuguese tech companies to support student-industry outreach.

Technical Skills

Languages: TypeScript/JavaScript, Java, Python, Ruby, C, C++, Kotlin.

Web: React, Next.js, Astro, AngularJS, TailwindCSS, TanStack.

Data & Backend: SQL, PostgreSQL, TimescaleDB, MongoDB, Redis, Cassandra, Neo4j, MariaDB, MinIO; SpringBoot, Flask, FastAPI; Kafka, RabbitMQ.

ML & Cloud: TensorFlow, NumPy, OpenCV; AWS, Azure, Google Cloud.

Languages

Portuguese (native) • English (fluent) • Spanish (intermediate)

References

The following professors have supervised my work or collaborated closely with me, and are available to provide references.

Prof. Samuel Silva
Associate Professor, DETI | Researcher, IEETA — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: sss@ua.pt ORCID: 0000-0002-9858-8249

Relationship: supervisor of my MSc dissertation and of my research grant within the SENSINGHOME project, and co-author of several of my publications. Also followed my work as a lecturer across several courses of my BSc and MSc programmes.

Prof. Bernardo Marques
Assistant Professor, DETI | Researcher, IEETA — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: bernardo.marques@ua.pt ORCID: 0000-0002-4454-710X

Relationship: co-supervisor of my MSc dissertation and co-author of several of my publications, including work developed within the CADFACTS and SENSINGHOME projects. Also followed my work as a lecturer across several courses of my BSc and MSc programmes.

Prof. Paulo Dias
Associate Professor with Habilitation, DETI | Researcher, IEETA — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: paulo.dias@ua.pt ORCID: 0000-0002-3754-2749

Relationship: co-author of my publications on virtual and extended reality for public speaking training, and part of the teaching team that followed the SpeakEase project. Also followed my work as a lecturer across several multidisciplinary courses of my BSc and MSc programmes.

Prof. Beatriz Sousa Santos
Full Professor, DETI | Researcher, IEETA — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: bss@ua.pt ORCID: 0000-0002-2219-2731

Relationship: co-author of my publications on virtual and extended reality for public speaking training, and part of the teaching team that followed the SpeakEase project. Also followed my work as a lecturer across several multidisciplinary courses of my BSc and MSc programmes.

Prof. Mário Luís Pinto Antunes
Assistant Professor, DETI | Researcher, Instituto de Telecomunicações (IT) — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: mario.antunes@ua.pt ORCID: 0000-0002-6504-9441

Relationship: lecturer of the Applied Learning for Security course, where he supervised and supported the development of the DGA Detection System, work currently being prepared for publication.

Prof. Petia Georgieva
Associate Professor with Habilitation (DSc), DETI | Researcher, IEETA and Instituto de Telecomunicações — University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

E-mail: petia@ua.pt ORCID: 0000-0002-6424-6590

Relationship: lecturer across several machine learning courses of my BSc and MSc programmes, where she provided the foundations in machine learning and data science that supported my work in this area.

Prof. Diogo Gomes
Associate Professor, DETI — University of Aveiro

Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: dgomes@ua.pt ORCID: 0000-0002-5848-2802

Relationship: lecturer in courses such as Artificial Intelligence, and a close collaborator in pedagogical initiatives run with the Computer Science Students' Association (NEI / AAUAv), as well as in other extra-curricular and academic activities within the department.

Prof. José Luís Guimarães Oliveira
Full Professor, DETI | Director, IEETA — University of Aveiro

Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: jlo@ua.pt ORCID: 0000-0002-6672-6176

Relationship: lecturer across several courses of my MSc programme, in particular the pre-dissertation seminar, and a supporter of pedagogical initiatives for MSc students carried out through the Computer Science Students' Association (NEI / AAUAv).

Prof. Carlos Manuel Azevedo Costa
Associate Professor with Habilitation, DETI | Director of the BSc programme in Informatics Engineering — University of Aveiro

Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
E-mail: carlos.costa@ua.pt ORCID: 0000-0002-2707-5331

Relationship: lecturer in courses such as Databases and Advanced Databases, and, as director of the BSc programme, a collaborator in pedagogical initiatives run through the Computer Science Students' Association (NEI / AAUAv) in support of undergraduate students.