

Marco Costa Marques, PhD

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about.mcmarques.com



Biomedical engineer who owns medical AI products end to end: the clinical need, the backend code, the regulatory file, and the install on site.

From ideas to code to compliance.



CONTACT

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[56460795900](https://scopus.id/56460795900)

LANGUAGES

Portuguese (native), English

SKILLS

Software and data

Python (FastAPI, data pipelines, automation), MATLAB, AI-assisted coding tools, GitHub.

Google Cloud

BigQuery, Pub/Sub, Cloud Storage, IAM, AppSheet. Google Workspace, with Sheets and Docs.

Product and delivery

Roadmaps, user stories, Agile/Scrum, release management, Jira and Confluence, technical writing, onboarding and training.

Regulatory and data security

FDA and HTcert pathways, GDPR and HIPAA, medical data structuring, cloud-based data rooms.

Engineering and simulation

SolidWorks, Abaqus, Femap, Fusion 360, 3-matic, MIMICS. Finite element and meshless methods, FDM, SLA and DLP printing.

Hands-on making and fixing

Technical and handy by nature: I diagnose, repair and build things, from electronics and home automation to custom 3D printers.

Over five years driving AI integration, medical device software and multi-site healthcare platform deployments. I lead cross-functional teams from technical specification through FDA and HTcert compliance, across international markets.

EXPERIENCE

Product and engineering Oct 2024 – Present

Technical Project Manager, Product Owner, Backend Engineer

DigestAID · Digestive Artificial Intelligence Development

Product strategy and technical execution for an AI-powered medical diagnostic platform deployed across clinical sites in the US, Europe, Australia and Latin America, while developing its backend.

- Own the roadmap for multi-site deployments, balancing clinical requirements, technical feasibility and regulatory constraints (FDA, HTcert).
- Architect and oversee the Python backend (FastAPI, GCP) for real-time medical data processing.
- Lead on-site deployments, integrating Sony and Olympus endoscopy systems and fixing production issues.
- Turn complex clinical workflows into technical specifications and user stories, and manage release cycles from requirements to production and post-launch monitoring.
- Coordinate backend engineers, data scientists, clinical stakeholders, QA, designers and operators with Agile/Scrum, aligning the US, Europe and Australia around product-market fit.
- Implement AI/ML deployment pipelines that hold clinical accuracy and performance standards. Reduced deployment time and post-release defects by setting deployment standards and a release management process.
- Maintain technical documentation, SOPs and training material for clinical and technical users.

Python

FastAPI

GCP

FDA

HTcert

Scrum

Product and engineering Mar 2023 – Oct 2024

Technical Project Manager, Data Scientist, Backend Engineer

DigestAID

Led backend development of Python-based medical software and AI-driven solutions for clinical data workflows and analysis.

- Integrated AI/ML models (YOLO, computer vision) into live healthcare environments with data scientists and clinical teams.
- Kept sensitive medical data secure and compliant (GDPR, HIPAA), including data-room management across 20 clinical sites.
- Prepared technical files and compliance documentation for FDA and HTcert submissions.
- Wrote technical manuals, trained clinicians and support teams, and was the main technical contact through deployment cycles.
- Automated reporting and metadata analysis for AI models, validating metadata and optimising cloud data flows on GCP (BigQuery, Pub/Sub).

YOLO

Computer vision

BigQuery

Pub/Sub

GDPR

HIPAA

RESEARCH OUTPUT

11

Papers

10

Book chapters

23

International conference papers

26

National conference papers

6

MSc dissertation juries

All 70 publications are listed at about.mcmarques.com.

AWARDS AND FUNDED PROJECTS

- Best Student Presentation Award

CNB 2019, 3D homogenisation of trabecular bone tissue
- PRR Health Innovation Pact (HfPT, Health From Portugal)

Submission and approval
- PRR Transversal Technologies (Decentralise Portugal with Blockchain)

Submission and approval

TRAINING

- Technology and Innovation Management

IfM Engage, University of Cambridge, 2021
- Project Management

APGEI, 2021, 40 hours
- Team Management

APGEI, 2022, 16 hours

ALSO WORKING WITH

Electron

Claude Code

OpenCV

FFmpeg

Encord

ImageJ / FIJI

Microsoft Office

PowerApps

SharePoint



Scan for the full interactive version, with every project and all 70 publications.

Research Mar 2020 – Mar 2023

Researcher, Biomedical Engineer

INEGI · Institute of Science and Innovation in Mechanical and Industrial Engineering

Biomechanical design, prototyping and mechanical analysis of medical devices with CAD and finite element methods.

- Ran the LAETA Biomechanics and 3D Bioprinting Laboratory, including biomaterial characterisation and additive manufacturing (FDM, SLA, DLP, 3D scanning).
- Developed a medical device to assist suture of the aponeurosis, from CAD to supervised prototype production.
- Co-authored the Recovery and Resilience Plan (PRR) submissions that were approved.
- Research4COVID: guided junior researchers in material selection and 3D printing for COVID-19 solutions.
- Built and assembled custom FDM 3D printers for PLA, as part of a project on numerical models for fused filament fabrication.
- Business development: found partners and projects, planned timelines and set milestones.

Teaching and education Sep 2017 – Mar 2018

Invited Assistant Professor, CAD Laboratory

IPCA · Polytechnic Institute of Cávado and Ave

Taught in the CAD laboratory alongside doctoral research.

Teaching and education Sep 2015 – Apr 2020

PhD in Biomedical Engineering

FEUP · Faculty of Engineering, University of Porto · FCT scholarship SFRH/BD/110047/2015

Thesis: “A Homogenisation Technique for Multiscale Analysis of Bone Tissue Combined With Advanced Discretisation”. A validated numerical framework for bone remodelling with finite element and meshless methods.

- Doctoral researcher from Jan 2016 to Nov 2019, linking CT and micro-CT imaging to mechanical models in MATLAB, ImageJ, FIJI, FEMAP and 3-matic.
- Defined patient-specific prosthetics and surgical guides with the Mimics Innovation Suite.
- Chaired sessions at LAETA (2017) and Biodental (2018) and ran a workshop on going from medical images to 3D finite element models.

Research Feb 2015 – Dec 2015

Research Associate, Biomechanics in Healthcare

Project “Biomechanics: contributions to the healthcare” · QREN NORTE-07-0124-FEDER-000035

Biomechanical analyses with finite element and meshless methods for patient-specific designs and prosthetics, and an early prototype of a surgical guide for knee surgery. First contact with Mimics and 3-matic.

Research Jul 2013 – Dec 2014

Researcher, Power Textiles Século 21

IPCA · Project PT-21

Motion capture analysis feeding biomechanical simulations (finite element and multibody), plus 3D representation and virtualisation of the clothing projects.

Research Jun 2012 – Jan 2013

Researcher, Signal and Image Division

INEB · Institute of Biomedical Engineering

Automated segmentation and characterisation of in vitro cell cultures with computer vision, machine vision and image processing.

Teaching and education 2007 – Jul 2012

Integrated Master’s in Bioengineering, Biomedical Engineering

FEUP · Faculty of Engineering, University of Porto

Dissertation: “Biomechanical Study for the Rehabilitation of the Human Middle Ear”, using finite elements to analyse the behaviour of middle ear prostheses.