Koji Andriamahery

HARDWARE R&D ENGINEER, HEALTH TECHNOLOGIES

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Overview

With an emphasis on healthcare, my interests promote cross-disciplinary engineering initiatives. My background mainly lies in **hardware and embedded systems engineering** put to human-centered topics such as **health-sensing, physiological signal processing, assistive technologies, and IoMT.**

Work Experiences

Stella Surgical — Montpellier, France

Research and Development Engineer, Hardware & Data Acquisition Systems — 06/2023 - current

- Worked on real-time digital twin modeling of liver grafts for clinical decision making during organ transplant processes.
- Conceived new types of embedded devices and physiological data analysis techniques for liver grafts viability assessment.
- Designed a machine perfusion system simulator from scratch (hardware : **MCAD**, 3D printing, pump motors, flow sensors, ... and software : **C/C++, Qt**) for surgical training.
- Led feasibility studies on early-stage projects with industrial and clinical partners.

Embedded Systems Engineer — 01/2022 - 06/2023

- Led product engineering for medical embedded systems, including firmware implementation (**C, C++**) and test automation (**Python**) for organ tracking IoMT sensors - GNSS, temperature, light, humidity and shocks.
- Worked on needs and clinical processes models (**MBSE, BPMN**), IoT mechanical and cloud integrations (**Google Cloud backend development, NodeJS with TypeScript**), and technical tests reports for medical compliance (ISO 13485).
- Industrial exhibitor for live product demonstration at various international medical and scientific congresses (US, EU).

LIRMM - Smart Integrated Electronic Systems Group — Montpellier, France

Hardware / Firmware Engineer, DSP & edge ML — 09/2021 - 01/2022

- Initiated a personal research experimentation : Embedded hand gesture recognition for sign language interpretation.
- Led hardware architecture (wearable form-factor). and MCAD/ECAD rapid prototyping (3D printing, PCB milling).
- Worked on DSP firmware programming (**C/C++, Matlab**) and edge ML.

HumanLab Saint-Pierre — Palavas-Les-Flots, France

Assistive Technology Designer — 01/2021 - 07/2021

- Developed a wearable assistive robotic orthosis (**C/C++**) for children in collaboration with health professionals (physicians, prosthetists /orthotists, occupational therapists) from Institut Saint-Pierre (paediatric hospital).
- Designed various hardware assistive technologies using rapid-prototyping techniques with end-users.

TU Delft - Interactive Intelligence Group — Delft, The Netherlands

Research Assistant, Responsible AI — 05/2020 - 08/2020

- Computational modeling of an ethical decision-making mechanism to incorporate moral uncertainty on autonomous vehicles : application of data-analysis techniques and frameworks (**Python, SQL**) on MIT's "Moral Machine" dilemma dataset.
- Peer-reviewed publication : https://doi.org/10.3389/fnrgo.2023.1147211

Education

M.Sc. in Digital Health, University of Montpellier - Faculty of Medicine and Sciences. — 2022

Major : Health Devices Engineering

- Graduated with high honors (Ranked 1st).

Diplôme d'ingénieur (M.Eng.) in Systems Engineering, IMT Mines Alès - School of Engineering. — 2022

Major : Mechatronics

- First TEDx Licensee of both the Engineering School and the city.

Miscellaneous

Languages : French (native), English (fluent, C2 level - CEFR guideline), Spanish (notions).

Music : Graduated in jazz music from Conservatory of Music and Dance (Amiens, France). Instruments : saxophone. bass, guitar, drums, EWI, and some weird sounding home-made prototyped things.

Other collaborations and participations

European Society for Organ Transplantation, European Congress (Athenes, Greece). 2023
Industrial Exhibitor for live product demonstration.

Association of Organ Procurement Organizations, US Congress (Orlando, US). 2023
Industrial Exhibitor for live product demonstration.

Sorbonne University, Saint-Antoine Research Centre. 2022
Pilot study of a new clinical organization model for organ procurement activities.

Mines Paris - PSL, Centre for Management Science. 2022
Medico-economic evaluation of the use of new ICT and machine perfusion systems during organ transplant processes.

Fachhochschule Dortmund, Faculty of Mechanical Engineering. 2017
Visiting student - practical courses on mobile robotics.