Koji Andriamahery

RESEARCH ENGINEER, HEALTH TECHNOLOGIES

Phone : +33 6 35 30 49 42
Email : koji.andria@e.email
ko-sinus.github.io

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 **bio-sensing, physiological signal processing, assistive technologies, and IoMT.**

Work Experiences

Stella Surgical — Montpellier, France

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

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

Hardware Systems Engineer — 01/2022 - 06/2023

- Established systems engineering methods (MBSE) and developed medical embedded systems in the field of organ transplantation.
- Led firmware implementation (**C, C++**), test automation (**Python**) and suppliers management for GNSS, temperature and shocks asset tracking sensors.
- Led product engineering, including process modeling (MBSE, BPMN), sensors integration (**backend development, Google Cloud functions, NodeJS with TypeScript**) and technical management and documentation for medical compliance (ISO13485).

LIRMM - Smart Integrated Electronic Systems Group — Montpellier, France

Hardware/Firmware Engineer — 09/2021 - 01/2022

- Initiated and led a personal research experimentation : Embedded hand gesture recognition and bio-sensing for sign language interpretation.
- Worked on hardware architecture, MCAD/ECAD, DSP firmware programming (**C/C++, Matlab**) and edge ML.

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

Assistive Technology Designer — 01/2021 - 07/2021

- Developed an assistive robotic orthosis for children in collaboration with health professionals (physicians, ortho-protesists, occupational therapists) from Institut Saint-Pierre (paediatric hospital).
- Designed various hardware assistive technologies using rapid-prototyping techniques with end-users, whether mechanical (additive manufacturing, laser-cutting, MCAD) or electronic (ECAD, single-board computers and microcontrollers) tools.

TU Delft - Interactive Intelligence Group — Delft, The Netherlands

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

- Computational modelling of an ethical decision-making mechanism to incorporate moral uncertainty on autonomous vehicles.
- Application of data-science techniques and frameworks (**Python, SQL**) on MIT's "Moral Machine" dilemma dataset.
- Peer-reviewed publication : Sietze K., Koji A., Catholijn J. and Luciano S. 2023. Normative uncertainty and societal preferences: the problem with evaluative standards. Frontiers Neuroergonomics, Sec. Social Neuroergonomics. Volume 4 - 2023 | https://doi.org/10.3389/fnrgo.2023.1147211

Education

University of Montpellier - Faculty of Medicine and Sciences. 2022

M.Sc. in Digital Health

- Major : Health Devices Engineering.
- Graduated with high honors (Ranked 1st).

IMT Mines Alès - School of Engineering. 2022

Diplôme d'ingénieur (M.Eng.) in Systems Engineering

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

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 organization model for organ transplantation activities.

Mines Paris - PSL, Centre for Management Science. 2022

Medico-economic evaluation of introduction of novel ICT and perfusion systems in transplant processes.

Fachhochschule Dortmund, Faculty of Mechanical Engineering. 2017

Visiting student - practical courses on mobile robotics.

Volunteering

HumanLab Saint-Pierre, as Maker. 2023

Designer for assistive-technology project owners. Prototyped an assistive wheelchair during Fabrikarium first edition event.

TEDxIMTMinesAles, as Founder, Lead Organizer and TEDx Licensee. 2020

Organized the first edition of TEDx conferences of the city as TEDx Licensee. Created and managed an executive team, planned main objectives and lead partnerships as main interlocutor of all external stakeholders and speakers.

Conservatory of Music and Dance, as Exhibitor Maker. 2017

Held an exhibition for the ArtFab event, for the design of a retroactive light and sound system.

Miscalleneous

Languages

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

Music

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