Valentinus Mahendra Aaron Quendangen

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Education

Universitas Airlangga August 2019 – July 2023

Biomedical Engineering – Medical Instrumentation Major

GPA/IPK: 3.68

Some of what I Learned: Programming and biomedical computing (C++, Python, Matlab), digital and analog electronics, control systems, intelligent systems, signal processing, biomaterials, Embedded Systems, anatomy and physiology

Experience

Engineer Surabaya

PT Medika Karya Airlangga December 2023 - Present

- Research and development of a smart phototherapy system for jaundiced babies - Smart Phototherapy System Airlangga Bilirubin Nesting (AirBiliNest) Model 2 and 3.
- Charge in managing technical issues, including the prototyping, PCB, wiring design and assembly of the controller, lamp design, sensor development, microcontroller programming, technical drawings, Android application development, and web development.
- Gather data, including the temperature, humidity, Heart rate and SpO2 sensor, irradiance intensity, and safety in Airlangga University Hospital, and process the data for paper and future development.
    - Troubleshooting, basic electronics, soldering, Microcontroller, PCB design, Graphic Design, Laser Cutting, Soldering, Communication, Testing, Demonstrating, RnD, Android Studio, 3D Printing Design, front-end Web Design, back-end web design, Autodesk Inventor

Research Engineer Assistant Surabaya

Neonatal Research Group FK Universitas Airlangga August 2023 - Present

- Develop the research of Smart Phototherapy System Airlangga Bilirubin Nesting (AirBiliNest), which is a smart phototherapy device for jaundiced babies that can be monitored and controlled using android application. Assembling, testing, and multiplying the prototype required.
- Gather data, including the temperature, humidity, irradiance intensity, and safety in Airlangga University Hospital, and process the data for paper and future development.
- Implementing the MBKM Matching Fund events related to this device with the students, faculty, and industry partners in West Java.
    - Troubleshooting, Microcontroller, Laser Cutting, Soldering, Communication, Testing, Demonstrating

Merdeka Belajar Kampus Merdeka (MBKM) Matching Fund Surabaya

PT Integrasi Bisnis Eksekutif (IBE Reality) September 2022 - January 2023

- Assisting with the manufacturing of X-Mano, the Wearable Exoskeleton Hand Robot for Movement Therapy of Post-Stroke Patients, through the 4-month internship. Including the 3D design for the case, microcontroller, assembly, and Android application.
- Assist the clinical trial to gain feedback from 20+ post-stroke patients in Universitas Airlangga Hospital.
    - 3D Printing, Autodesk Inventor, Microcontroller, Clinical trial, Entrepreneurship

Mentor on Coding Workshop for Biomedical Engineering Surabaya

Himpunan Mahasiswa Teknik Biomedis (HMTB) UNAIR March 2021 - June 2021

- Teach the basic use of syntax, function, and how to make simple programs using C++ and Python for the Biomedical Engineering students class of 2021.
- Check and evaluate the results of the program creation task.
    - C++, Python, Teaching, Speaking

Technical Expertise

Programming (Python/MicroPython, C++/Arduino, Matlab, HTML) | Arduino, ESP, Analog Discovery | Basic electronics, Electrical circuits, analog and digital electronics, Soldering, PCB design, 3D Printing, Laser cutting, Graphic design

Achievements

- Best team work at Sebelas Maret International IoT Challange 2021
- Silver award for iMIT SIC 2021 (4th International Malaysia-Indonesia-Thailand Symposium on Innovation and Creativity 2021) held by UiTM Cawangan Malaysia,
  "3d (Three-Dimensional) Lung Cancer Detection and Identification Based On Mixed Reality"

Organizations

- FORMAT (Faculty Press Organization) | Design and Layout Staff 2019 - 2020
- BKK (Faculty Catholic Organization) | MEDINFO Staff (Media and Information) 2019 - 2020
- BKK (Faculty Catholic Organization) | Head of Human Resources Development 2020 - 2021

Research and Publications

- Edukasi Siswa Sma Negeri 1 Kampak Kabupaten Trenggalek Provinsi Jawa Timur Melalui Pelatihan Rancang Bangun Alat Deteksi Kelelahan Berbasis Audiovisual Dalam Peningkatan Mutu Kerja Dan Kesehatan. (Vol. 4 No. 2: Jurnal Pepadu, DOI:10.29303/pepadu.v4i2.2370) 2023
- Design Of Mulifrequency Electrical Impedance Tomography (Mfeit) Based On Analog Discovery To Detect Breast Cancer. (Vol. 87 No. 1: Jurnal Teknologi, DOI:10.11113/jurnalteknologi.v87.21921) 2024
- Evaluation of New Portable Phototherapy Device for Neonatal Hyperbilirubinemia (International Research Journal of Multidisciplinary Scope (IRJMS), DOI:10.47857/irjms.2025.v06i02.03766) 2025

Mini Projects

Projects: https://ronaaron61.github.io/project/

- Electrical Impedance Tomography using ESP Microcontroller to detect anomalies in a phantom that looks like a human body
- Bioimpedance measure using a Microcontroller, and can be used to detect hand angle estimation to control the mechanical arm
- Simple EMG and ECG module for a microcontroller using AD620
- Virtual mouse and keyboard that can be controlled by finger position in the webcam using Python and mediapipe library