Hadi Rayan Al-Sandid

Portfolio: hsandid.github.io
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Education

- **École Polytechnique (l'X)** — Palaiseau, France
  MSc&T, Internet-of-Things : Innovation and Management — *September 2021 - August 2023*
  Courses: *Internet of Things Workshops - Computer Networking - Business Models in the Digital Era*

- **American University of Beirut (AUB)** — Beirut, Lebanon
  Bachelor of Engineering, Computer and Communications Engineering — *September 2017 - August 2021*
  GPA : 3.7/4.0, Graduated with Distinction
  Courses: *Operating Systems, Embedded Microprocessor Systems, Radio-Frequency Circuit Design, Network Security, Database Systems, Electronics, Software Architecture and Design, Data Structures and Algorithms*

Skills Summary

- **Hardware**: Familiar with KiCad/OrCAD for PCB Design, and PSPICE/Proteus for circuit analysis.
- **Programming**: Proficient in C/C++. Familiar with Python, Java, C#.
- **Embedded**: Familiar with microcontroller programming & embedded communication protocols.
- **Networking**: Familiar with network configuration and routing on Linux.
- **Languages**: French (Native tongue), English (Professional proficiency), Arabic (Conversational)

Experience

- **American University of Beirut**
  Research Assistant - Google AI-Impact Project — *August 2019 - August 2021*
  - Worked on a smart Irrigation Management System under the supervision of Dr. M. Saghir, to help Lebanese farmers use water resources more efficiently on their agricultural fields.
  - Delivered an on-site hardware solution based on Raspberry-Pi systems to control irrigation routines, a set of custom PCB designs to support additional wireless technologies in our systems (LoRa/GSM), and an Android mobile application to allow farmers to access their agricultural fields' data.

Publication

- **"Arrow: RISC-V Vector Accelerator for Machine Learning Inference"** — *August 2020 - July 2021*
  - Presented design-time configurable hardware vector accelerator in the Fifth Workshop on Computer Architecture Research with RISC-V (CARRV 2021), along with co-authors M. Saghir, I. Al Assir, and M. El Iskandarani.
  - Experimented with the GNU/GCC RISC-V cross-compiler and the RISC-V v0.9 vector ISA extension to optimize code for our accelerator, test additional ML-related instructions, and develop benchmarks to assess performance.
  - Obtained results that show that the Arrow co-processor can execute a suite of vector and matrix benchmarks fundamental to machine learning inference 2x to 78x faster than a scalar RISC processor.

Academic Projects

- **RF Low Noise Amplifier operational in the X-Band** — *September 2020 - December 2020*
  - Designed in the scope of a course on Radio-Frequency Circuit Design, this low noise amplifier is operational at a frequency of 10 GHz and uses commercially available components.
  - Conducted research using Pathwave ADS to find the optimal component configuration and transistor biasing to obtain a low noise amplifier with a target gain of 12 dB, a noise figure inferior to 1.5 dB, and a minimal VSWR at both input and output.

- **Chat-Service Back-End in the Cloud** — *January 2020 - May 2020*
  - Developed in the scope of a course on Web Services in the Cloud, this back-end system allows users to communicate through an application interface, while guaranteeing scalability and a low-latency.
  - Implemented back-end using the ASP.NET Core framework, and deployed it through the Azure DevOps platform using version control (Git), and continuous integration & delivery methodology. The back-end's micro-services offer a RESTful API, which can be validated using several integration tests and deployment tests.

Awards and Interests

- Placed on Dean's Honor List (American University of Beirut) : Spring 2018, Fall 2020, Fall 2021, Spring 2021.
- Involved regularly in team sports and outdoor activities, including Hiking, Tennis, and Football.
- Participated in the "Big Data AI and Media Hackathon" organized by Anghami and Touch (January 2019).
- Participated in "Google Hash Code 2020", while registered at the American University of Beirut