Allan Valle

Email: paz@rptu.de
LinkedIn: linkedin.com/in/allan-valle-257818170
GitHub: github.com/AllanValle

EDUCATION

Technical University of Kaiserslautern-Landau (RPTU), Kaiserslautern
Master in Electrical and Computer Engineering **March 2021-August 2024**

- Thesis title: Memory Bandwidth Regulation for Mixed-Criticality Systems in gem5.
- Coursework in: Computer Architecture, Embedded Systems, Image Processing

National Autonomous Unversity of Honduras (UNAH), Tegucigalpa
Bachelor in Electrical Engineering **September 2014-June 2019**

- *cum laude* (Class rank: 5 out of 105)

EXPERIENCE

Technical University of Kaiserslautern-Landau (RPTU) **Kaiserslautern**
Chair of Real-Time Systems - Research Assistant (HiWi) *October 2021-Present*

- Designed a new hardware component that improves main memory predictability of a computer running both real-time and best-effort applications. Implemented it in the hardware simulator gem5 using C++ and Python. Extended simulator in order to run memory stressing benchmarks.
- Ported a MPEG2 PikeOS hypervisor application from a Zynq7000 board into an ARM virtual machine running on an x86 host. Extensively used KVM/QEMU virtualization tools and optimized performance using CPU pinning. This resulted in cost savings for the department.
- Provided technical support to students of Real-Time Systems I and II Laboratories (x4 semesters) in the following topics: Linux Drivers, Threads/Processes, FreeRTOS, and PikeOS Hypervisor.

Micheal Deynet Engineering **Kaiserslautern**
Research Assistant (HiWi) *April-May 2023*

- Developed embedded applications for the ESP32 board.

Breegi Scientific Inc. **Remote**
Research and Development Engineer *July 2019-March 2021*

- Developed a jaundice detection algorithm for neonatal incubators using computer vision, implemented in Android using OpenCV.

Intern *December 2018 - June 2019*

- Developed eye-protecting phototherapy control software for neonatal incubators using OpenCV.

Honduran Institute of Earth Sciences **Tegucigalpa**
Research Volunteer *July 2017-March 2021*

- Designed hardware, PCB layout and developed software of a device that measures greenhouse gas emissions of ponds. Part of a study that compares the environmental impact of different water treatment methods used in coffee production. Funded by CARE Canada.
- Designed hardware for a tipping bucket rain gauge for automatic weather stations.

- Built hardware and developed software for a low-cost internet-connected automatic weather stations and flood warning systems, extending the university's weather data collection network, in collaboration with a team of students. Installed 6 of these devices in south Honduras.
- Designed an ultrasonic sensor based flow meter for water tanks. This device estimates the water supply of a village, assisting the village's decision-making regarding rationing. Installed 18 of these devices in rural villages.

Honduras Red Cross **Tegucigalpa**
Volunteer *September-November 2019*
- Calculated sizing of photovoltaic systems for 3 schools that were disconnected from the electric grid in Intibuca, Honduras.

TALKS & CONFERENCES

Poster: Work-in-Progress: Memory Bandwidth Manager in gem5 for Mixed-Criticality Applications, ECRTS July 2024

A Novel Approach to the Design of Low-cost Tipping Bucket Rain Gauges, IEEE CONESCAPAN, Costa Rica September 2019

Monitoring of Hydrometeorological Variables with Embedded Systems, School of Physics, UNAH November 2018

EXTRACURRICULAR COURSES

Agrometeorology, School of Physics, UNAH 10-15 June 2019

Climatology, Statistical Methods Applied to Meteorology, School of Physics, UNAH 10-15 June 2019

Atmospheric Dynamics, Synoptic and Tropical Meteorology, School of Physics, UNAH 22 April - 10 May 2019

Cisco CCNA 1 Routing and Switching: Introduction to Networks, UNAH September - December 2018

Differential Geometry for General Relativity, School of Physics, UNAH December 2017-January 2018

SKILLS & INTERESTS

Technical C, C++, Python, Java, Git, Latex, Make, Bash, Linux Driver Development, OpenCV, QEMU, KiCAD

Language English C1, Spanish Native, German B1

Interests Playing guitar, Hiking