

Benjamin Cathelineau

YOUNG GRADUATE, LOOKING FOR AN EMBEDDED SOFTWARE ENGINEERING JOB

Chemin des Gravieres 2B, 1290 Versoix, Switzerland

0764784813 | bencathelif@gmail.com | benjamin-cathelineau-391484172/

Education

Grenoble INP - Ensimag and Université Grenoble Alpes

Grenoble, France

MASTER OF SCIENCE IN INFORMATICS AT GRENoble - DISTRIBUTED COMPUTING: FROM CLOUD TO EDGE COMPUTING,
EMBEDDED SYSTEMS, AND NETWORKING

October 2021 - June 2022

- Obtained a PhD scholarship based on academic achievements

Grenoble INP - Ensimag

Grenoble, France

ENGINEERING DEGREE - INFORMATION SYSTEMS ENGINEERING

September 2020 - June 2022

Université Savoie Mont Blanc, Exchange with Montana State University

Bozeman, Montana, USA

BACHELOR - COMPUTER NETWORKS AND TELECOMMUNICATIONS

August 2019 - May 2020

IUT Annecy - Université Savoie Mont Blanc

Annecy, France

UNIVERSITY DIPLOMA OF TECHNOLOGY - NETWORKS AND TELECOMMUNICATIONS

September 2017 - June 2019

Skills

Langages	C, C++, Python, Java
Embedded and Linux programming	GDB, valgrind, make, baremetal C, linux system calls, pthread, RISCv
Modeling and Simulation of Embedded Control Systems	Simulink, SystemC-TLM, QEMU, Physical Modeling (Differential Equations)
Computer Networks	IP, Ethernet, TCP, UDP, WiFi, Cisco CCNA 1 and 2
DevOps and Automation	Docker, Kubernetes, git, Jenkins, Shell Scripts
Languages	French (Mother Tongue), Fluent English (TOEIC 970, TOEFL 104)
Driver's licence	

Professional Experiences

Université Grenoble Alpes

Grenoble, France

PHD CANDIDATE - TEST AND RELIABILITY ANALYSIS FOR CYBER-PHYSICAL/EMBEDDED SYSTEM MODELS

October 2022 - October 2023

- Comparative evaluation of the simulation engines of SystemC and Simulink
- Development of Simulink S-Functions
- Development and refinement of case study models
- Development of TLM virtual platforms

Languages and tools: SystemC-TLM, C++, Simulink, GDB

Université Grenoble Alpes, DLST

Grenoble, France

TEACHER

January 2023 - May 2023

- System and Programming Environment course for first-year university students
- Bash scripts, C programming basics, and simple finite-state machine modeling
- Labs and in-class exercises

Languages and tools: C, Bash

TIMA Laboratory

Grenoble, France

MASTER 2 INTERN

February 2022 - June 2022

- Parallel Simulation of Cyber-Physical/Embedded Systems models in SystemC
- Direct interaction with the discrete event simulator
- Development and refinement of case study models
- Scalability tests

Languages and tools: SystemC, C++

Kayentis Company

ENGINEER ASSISTANT INTERN

- Fault tolerance Automatic Response System *PowerShell* script
- Web Browser automation with *Selenium* for probing Web Services
- KeePass API for managing credentials

Languages and tools: PowerShell, Python, Selenium, Jenkins, Tomcat, KeePass, Windows, and Linux servers

Meylan, France

May 2021 - September 2021

Givaudan Company

INTERN

- Research and deployment of a network monitoring solution (Advanced Host Monitor)

Languages and tools: PowerShell, Windows and Linux servers, Advanced Host Monitor

Vernier, Switzerland

April 2019 - July 2019

Abissa Informatique Genève Company

INTERN

- Research and deployment of an IPAM (IP address management) solution (PhpIpam)

Languages and tools: Linux server, phpIPAM

Genève, Switzerland

July 2018 - August 2018

School Projects

Group Project: RISC-V Operating System

GRENOBLE-INP ENSIMAG

- Context Switch, Interruptions
- Processes and Scheduling
- Virtual Memory
- Keyboard UART Driver
- Basic Shell

Languages and tools: Baremetal C, RISC-V assembly, GDB, QEMU

Grenoble, France

February 2021 - May 2021

Adding 128 bits RISC-V Architecture to QEMU

GRENOBLE-INP ENSIMAG

- Modification of the software emulation tool QEMU
- Addition of a subset of 128-bits instructions
- Bubble Sort RISC-V Assembly Program
- Performance Evaluation between 64 and 128 bits

Languages and tools: C, RISC-V assembly, GDB, QEMU

Grenoble, France

February 2021 - May 2021

C Development under Linux, with System Calls

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- **Development of a Shell**
 - Background Jobs
 - Resources Limits (ulimit)
 - Interprocess Communication (Pipe) → `dup` System Call
 - Globbing (glob)
- **Development of a Memory Allocator**
 - `malloc` and `free` Implementation
 - Buddy Allocation
- **Development of Multi-threaded Audio/Video Player**
 - For the Theora video format and the Vorbis audio format
 - One thread for audio, one thread for video
 - Synchronization with mutex and conditions

Languages and tools: C, pthread, GNU Readline, Linux system calls

Grenoble, France

September 2020 - November 2020

Group Project: Experimental Evaluation of Cache Performance

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- Multiple Kinds of Loops on a 3D Array
- Valgrind to Estimate Cache Performance
- Execution Time Measured with `time` Command

Languages and tools: C, Valgrind, Bash

Grenoble, France

September 2020 - November 2020

Group Project: Compiler for the DECA Educational Language

GRENOBLE-INP ENSIMAG

- Trigonometry Library Extension: `cos`, `sin`, `ulp`...
- Bash Script Test Infrastructure

Languages and tools: Bash, DECA

Grenoble, France

January 2021

Group Project: GPGPU Solution to the 4-Color Problem

Grenoble, France

GRENOBLE-INP ENSIMAG

September 2021 - November 2021

- CUDA (C++) on Nvidia GPU to find solutions to the 4-Color Problem
- Evolutionary Algorithm: Every CUDA Core Corresponds to an Individual in the Population
- Mutation and Fitness Estimation in Parallel on All CUDA Cores → Scalability with Respect to Number of CUDA Cores
- Relevant Use of Different Kinds of Memory of the GPU (Local, Global, Shared)

Languages and tools: C++, CUDA

Scheduling Priorities Validation in the Linux Kernel

Bozeman, Montana, US

MONTANA STATE UNIVERSITY

September 2020 - November 2020

- Goal: Validation of the Impact of Scheduling Priority on the Execution Time of Processes
- Basic C Test Programs
- **stress-ng** to Generate CPU Load on the System
- **chrt** to Change Process's Priority
- Execution Time Measured with **time** Command

Languages and tools: C, Bash