MARCO PERRONET · CURRICULUM

Marco **Perronet**

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Summary_

I have two years of professional experience as a software engineer and three as a PhD student in real-time operating systems. I started my career by pursuing a Master+PhD program in Germany at Max Planck Institute. I then moved to London for an internship at Meta, and I am now working as a software engineer at **Bloomberg**.

My main programming languages are C++, Rust, Python, and OCaml. Being interested in low-level programming and operating systems (both user and kernel space), I am experienced with Unix, C programming, and Bash scripting. I also have an interest for tracing and observability.

Work Experience ____

Bloomberg

SOFTWARE ENGINEER - TRADING SYSTEM BACKEND (C++, DISTRIBUTED SYSTEMS, QUEUING MIDDLEWARE)

- Re-architectured a monolithic service by building four microservices from scratch
- Developed core libraries used across our services, which led to deduplication of code (e.g. Kafka subscription client, rule engine...)
- · Improved observability into the system using telemetry tools, which allowed us to improve latency and uncover critical bugs
- Responsible for the design and development of a new product which ultimately led to the acquisition of new customers

Max Planck Institute For Software Systems

PHD STUDENT - REAL-TIME OS (RUST, C++, LOW-LEVEL LINUX)

• Worked in the field of real-time operating systems focusing on trace-based response-time analysis on Linux

• Developed DMXtrace: a tool written in **Rust** which traces processes to analyze the timing correctness of the system [Code] [Paper]

Meta

SOFTWARE ENGINEERING INTERN - INFER STATIC ANALYZER (OCAML, PYTHON)

- Extended an open-source static analysis tool (Infer) with an experimental analysis described in an existing paper [Website] [Code]
- The approach enabled the detection of potential null pointer exceptions using declarative logic programming with Datalog

Education

Technische Universität Kaiserslautern	Kaiserslautern, Germany
Master's degree in Computer Science	2019 - 2022
Thesis: "Dynamic Extraction of Real-Time Models from Arbitrary Workloads on Unmodified Linux Kernels"	
Università degli studi di Torino	Turin, Italy
Bachelor's degree in Computer Science	2016 - 2019
Thesis: "Monitoring the Linux scheduler with trace_sched events"	

Projects

LINUX KERNEL PATCH

During my research work, I made a contribution to the Linux kernel by proving the existence of a minor bug in the real-time scheduler. I collaborated with a kernel maintainer to create a patch to fix it. [Patch]

TREECODES

I ideated "Treecodes": an alternative to QR codes which encodes information inside the topology of a tree. I developed a scanner app and optimized its OpenCV computer vision pipeline to achieve low latency (i.e. scans per second). I also designed and prototyped several strategies for encoding data and implemented the best one in C++. [Website with demo] [Code]

ZERO-LOOKAHEAD AI-BASED CHESS ENGINE

I implemented chess in C++ and then trained a neural network to play using a dataset of chess positions scored by a popular chess engine. I used common machine learning libraries such as Tensorflow and Scikit-learn, and Pandas to clean and process the dataset. [Code]

NP TO SAT TRANSFORM

I implemented an efficient transpiler in **C** that turns a (Turing machine, input problem) tuple into a formula for SAT solvers. [Code]

Dec. 2022 - Now

London, UK

Kaiserslautern, Germany

2019 - 2022

London, UK

Jun. 2022 - Aug. 2022