Lucian Mocan

lucian.mocan@northwestern.edu | linkedin.com/in/lucianmocan | github.com/lucianmocan

Education

University of Strasbourg Sep. 2024 – Aug. 2026
M.S. in Computer Science – Networks, Internet and Systems Engineering *Illkirch-Graffenstaden, France*

- **Relevant Courses**: Advanced Algorithms, Compiler Design, Operating Systems Design, Inter- and Intra-Domain Routing, Cloud and Virtualisation, Distributed Algorithms, Embedded Programming

University of Strasbourg Sep. 2021 – Aug. 2026
Cursus Master in Engineering (CMI): Internet, Systems and Networks *Strasbourg, France*

- Highly selective 5-year accreditation (Réseau FIGURE) with enhanced curriculum and research projects.
- Includes mandatory internships, international mobility, and advanced coursework beyond standard degree.

University of Strasbourg Sep. 2021 – June 2024
B.S. in Computer Science *Strasbourg, France*

- **Honors**: Ranked 6th in class. **Courses**: Operating Systems Architecture, Algorithms & Data Structures, Software Engineering, Computer Networks, Artificial Intelligence, Parallel Computing

Technical Skills

Programming: C/C++, Rust, Java, Python, R, PHP, JavaScript/TypeScript, SQL, NoSQL, MIPS Assembly
Systems: MPI, OpenMP, pthreads, shared memory, synchronization primitives, socket API (UDP/TCP)
Frameworks: Express.js, jQuery, Angular, React Native, Kotlin (Compose)
Tools: Git, Linux, Bash, Docker, Nomad, Consul, LDAP, Ansible
Networks: TCP/IP, OSPF, IS-IS, RIP, BGP, MPLS, DHCP, DNS, VLAN, P4
Languages: French (Fluent), English (Fluent), Romanian (Native), Russian (Intermediate)

Experience

Visiting Student Researcher Intern Feb. 2026 – July 2026
Northwestern University *On-site, Evanston, Illinois, USA*

- Conducting research on sandboxed portable execution inside Trusted Execution Environments for Edge Computing
- Investigating ways to accelerate system research using AI/LLMs

Language and Tooling Research Intern June 2025 – Sep. 2025
University of Strasbourg *Remote, Knoxville, TN, USA*

- Implemented **control-flow analysis** for functions and nested calls in **Althread**'s **Rust** compiler and VM
- Built a modular **import system** by analyzing import mechanics in Promela, TLA+, Python, Go, and C++
- Developed **Althread's web IDE** (TypeScript, WASM) with a virtual filesystem, package manager, and debugger
- Authored comprehensive documentation and API guides for new users (lucianmocan.com/projects/althread_import/)

Full-stack Web Engineering Intern June 2024 – Sep. 2024
Emerson *Cernay, France*

- Translated purchasing workflows into an Angular + Express.js solution, **saving 800+ hours** of manual work
- Automated quote requests and centralized data management for the purchasing department

Projects

Sharing Square | *University of Strasbourg (Group Project)* Sep. 2025 - Jan 2026

- Led a team of 5 students to prototype a privacy-centric IoT platform designed for crowdsourcing health, environmental, and smart city data (and any other type of measurable data).
- Architected an autonomous system to advance open science, enabling users to securely share data with researchers while maintaining strict privacy, accountability, and traceability.

Althread Compiler | *University of Strasbourg (Solo Research)* Feb. 2025 - May 2025

- Implemented **user-defined functions** in **Rust** for the Althread educational language (lucianmocan.com/projects/althread_functions/)

- Extended the compiler's grammar, AST, and **stack-based VM** to support function calls, recursion, and nested expressions

Cloud & Virtualization Project | *University of Strasbourg* Spring 2025

- Deployed a distributed **image hosting application** on a **3-node cluster** for horizontal scalability
- Configured **Nomad and Consul** for orchestration, service discovery, and resilient scheduling
- Implemented **HAProxy load balancing** with a floating IP to ensure high availability (github.com/Th2o1/projet-cloud-virt)

libpcap Network Analyzer | *University of Strasbourg (Network Services class)* Nov. 2024

- Designed a modular network analysis tool focused on protocol parsing and extensibility, following a layered, hexagonal-inspired architecture.
- Developed a protocol-aware API and implemented a functional CLI for interacting with pcap files, enabling rapid inspection of Ethernet, IPv4/IPv6, TCP, UDP, ICMP, ARP, DHCP, and more.
- Wrote protocol parsers with unit tests and built core components to support future GUI or web extensions (available at github.com/lucianmocan/pcap-network-analyzer).

Network Quality of Service (QoS) | *CMI Research Project* 2023

- Conducted a theoretical study of **IntServ/DiffServ** architectures and **MPLS** traffic engineering
- Analyzed signaling protocols (**RSVP-TE**) and routing optimizations like **ECMP** and **OSPF-TE**