

Gabriele Oliaro

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Education

HARVARD UNIVERSITY

B.S. Electrical Engineering. Minor in Computer Science. GPA 3.8

Cambridge, MA

May 2021

Relevant Coursework: Big Data Systems (grad) • Advanced Computer Networks (grad) • Operating Systems • Systems Programming and Machine Organization • Machine Learning • Mathematical Programming & Optimization • Computer Architecture (expected, Spring 2021) • Data Structures and Algorithms (expected, Spring 2021) • Probability • Discrete Math for CS • Linear Algebra • Multivariable Calculus • Signals and Systems • Feedback and Control • Circuits and Electronics • Electronic and Photonic Devices • Quantum Physics • Econometrics.

ISTITUTO LEONE XIII

High School diploma in Classics. Final grade 100/100

Milan, Italy

July 2017

Main Coursework: Ancient Greek, Latin, History, Philosophy, Literature

VASHON ISLAND HIGH SCHOOL

Exchange Student. GPA 4.0

Seattle Area, WA

Sept. 2015 – July 2016

SAT Subject Tests: 800 (Math II), 800 (Physics), 800 (Latin)

Research and Teaching Experience

UNIVERSITY OF CALIFORNIA, BERKELEY

Undergraduate Researcher with Prof. Ion Stoica @ Real-time Intelligent Secure Explainable systems (RISE) Lab

Berkeley, CA

June – August 2020

- Improved the throughput of cluster-computing framework Ray by pipelining the submission of tasks to worker nodes
- Used a work-stealing mechanism to rebalance work among worker nodes
- Tested the code, measured performance, and committed to Ray's open-source repository, with 13.8K stars on Github
- Presented the work with a poster at the Fall 2020 Poster session at the RISE Lab

HARVARD SCHOOL OF ENGINEERING AND APPLIED SCIENCES

Undergraduate Researcher with Prof. Minlan Yu

Cambridge, MA

Sept 2020 – Present

- Design and implement a low-overhead in-band network telemetry framework for programmable switches
- Implement a distributed filtering mechanism, together with a change-detection data-structure to filter out redundant network telemetry
- Improve the INT framework to minimize the reports sent to collectors
- Write an undergraduate thesis (work in progress) with title "Probabilistic In-band Telemetry CHECKER (PITCHER)"

Undergraduate Researcher with Prof. Eddie Kohler

May 2019 – June 2020

- Developed a user-level networking stack for Lua adapting open-source library picoTCP and integrating it with Lua's coroutine-based multitasking. Wrote code to help support live migration of Lua-based FaaS without interrupting active TCP connections
- Designed a benchmarking suite to measure network metrics such as throughput and latency and facilitated optimization of such values
- Design and implement a single-threaded, multiclient HTTP server in Lua that can be live-migrated and that supports the WebSocket protocol
- Wrote and debugged large codebase in C, C++, Lua and Python.
- Secured funding to help support the project by successfully applying for a Harvard College Research Program (HCRP) grant
- Co-authored a paper titled "Juice: Concentrated Application State for Stateful Serverless Platforms," submitted to NSDI '21

Teaching Assistant with Prof. David Malan

Aug. – Dec. 2018

- Served as a Teaching Assistant for Harvard's Introductory Computer Science course, CS50.
- Lead weekly 1h15min-sections to a group of ~20 students, held office hours, graded problem sets and exams
- Participated in the organization of course-wide events such as a CS50 Puzzle Day, a CS50 Hackathon and a CS50 Fair, where students showcased their final projects.

POLITECNICO DI MILANO

Undergraduate Researcher with Prof. Andrea Bonarini @ Artificial Intelligence and Robotics Lab (AirLab)

Milan, Italy

May – Aug. 2018

- Contributed to a ML framework to enable moving robots to detect and track people in their surroundings
- Designed and implement a detection algorithm based on a mixture of gaussian processes (MGP)
- Trained the detection algorithm using LIDAR data from a custom-designed robot named *Tryskar*
- Wrote code in Python and C++ to interface with ROS

Select Projects

Chickadee

Jan – May 2019

- Designed and implemented a whole multi-core kernel as term-time project for CS 161 at Harvard
- Managed and debugged large codebase in C++ with synchronization
- Implemented virtual memory, buddy allocator, processes, threads, wait queues, file system, disk support, buffer cache, signals and system calls.

Let's Meet!

Nov. – Dec. 2018

- Designed an iOS app to help students find peers who are available to study, eat lunch and do other activities
- Implemented the app using Swift. Operated a custom MySQL database backend interfaced by a REST API frontend written in PHP and SQL

SGAST (Series Graphing and Solving Tool)

Sept. – Dec. 2016

- Designed and implemented a Java app to help high school and college students learn infinite series.

Skills

Natural Languages: Italian (native), English, Latin, Ancient Greek

Programming Languages: C, C++, Python, Java, Lua, P4, PHP, Swift, Stata, AMPL, ROS, Mathematica, MATLAB, LaTeX

Technical: Distributed Systems, Operating Systems, Data Structures & Algorithms, Databases, NoSQL, Networking, Programmable Switches