

CURRICULUM VITAE

Antonio Vivace

avivace.com
github.com/avivace
avivace4@gmail.com

Paris
28 years old
(+39) 320 1171929

PROFESSIONAL EXPERIENCE

EUROCONTROL (European Organisation for the Safety of Air Navigation), Paris 10/2023 –
Software Engineer (Staff) Aviation

I'm working on the modernization of ESCAPE, a scalable air traffic management real-time simulation platform, originally developed in Ada.

- Evaluation, test and improvements of new DevOps and GitOps pipelines, targeting the Azure ecosystem
- Participating in sprints and retrospectives with external companies involved in de-risking activities. Reviewing their deliverables and providing technical guidance
- Developing an analytics module to gather usage statistic and logs the audio communication system we're developing (LiveKit, WebRTC, React)

Skills: Microservices design, Terraform, LiveKit Audio, NATS, Java (Quarkus, Spring), React, Azure DevOps

CERN (European Organization for Nuclear Research), Geneva 09/2020 – 08/2023
Software Engineer Research, Digital Preservation

I started and lead the development of a new digital long term preservation platform for CERN Digital Memory, following the **ISO OAI**S specification.

- Supervised and managed 6 students (summer and technical).
- Created a Python package for harvesting data from different upstream repositories
- Designed CERN SIP, a **specification format** to archive and transmit archival packages
- Developed the **Django backend** for orchestrating preservation workflows and integrating with other software pipelines (e.g. Archivematica)
- Designed an API surface to expose the platform functionalities and to allow different actors to upload data and trigger actions
- Developed a **web application** in ReactJS, exposing configuration capabilities and the service functionalities to final users
- Curated container images and maintained CI/CD pipelines for testing and deploy the infrastructure on OpenShift using Helm charts implementing DevOps and GitOps patterns
- Developed integration with existing services at CERN, such as SSO authentication, monitoring (Sentry), CERN Tape Archive API.
- Participated in the development of **InvenioRDM**, a digital repository software for Open Data and Access used by institutional and academic organizations in the US and Europe.

Skills: Microservices design, API and backend development, Mentoring, ReactJS, Django REST, Archivematica, Containers, Kubernetes, Helm charts, Openshift. GitHub actions and GitLab pipelines.

CERN (European Organization for Nuclear Research), Geneva

12/2019 – 03/2020

Software Developer

Research

I joined a team of physicists and completely overhauled the user and developer experience on a legacy software suite used to monitor the rates of the L1 and HLT triggers of the CMS detector at the Large Hadron Collider.

- Prepared and integrated datasets to develop an Anomaly Detection framework for monitoring the Trigger Rates
- Integrated Prometheus alerts on the existing monitoring software stack
- Developing a **new API** exposing data from the Rate Monitoring tools
- Developed a new **UI** in Vue.js consuming this API to plot trigger data (aiding trigger shifters and data acquisition experts)
- Maintaining and updating the **RateMon** tools, preparing for the LHC Run 3 operations
- Prepared and maintained resources and technical documentation to onboard new PhD students and other contributors
- Introduced new DevOps and GitOps processes to contributors. Prepared and shipped CI/CD pipelines to package, test and deploy the software.

Skills: ROOT, Python, Docker, microservices design, API development, OpenAPI.

MAW Men At Work, IC Moisè Loria, Milan

09/2018 – 06/2019

Technical Coach, Teacher

Education

Teaching a coding class (3 weekly hours) in middle school for **Girls Code It Better**, an Italian project trying to bridge the gender gap in STEM subjects, similar to the after-school clubs organized by **Girls Who Code**.

Skills: Coaching, teaching, communication, p5js, Blockly.

Università degli Studi di Milano Bicocca, Milan

10/2017 – 05/2019

Full Stack Developer, UX Designer (Fellowship)

Research

I lead the design and the development of a new software for **CoderBot**, an educative robot (powered by Blockly) used in primary schools to teach coding and introduce computational thinking to children. Documenting the software and hardware architecture, restructuring the existing stack. I managed and supervised the work of the team (7 students), each one implementing a new macro feature for their thesis. The API surface was rewritten with Flask and Connexion while the new web application was done in Vue.js, exposing new components to allow teachers and students to customise their workspace.

Skills: Raspberry Pi 3, Vue.js, Vuex, Vuetify, Axios, Python, Flask, Connexion, Debian/Raspbian, API development, OpenAPI.

HH - Hawks Holding S.r.l., Arcore

01/2018 – 01/2019

Project Manager. Full Stack Developer

Renewable energies

Lead the full stack development of a restful web application: a provisional software about the installation of new wind turbines. Developing ad-hoc tools to support the businesses of the Holding and showcase them to the public. Maintaining and designing Wordpress websites with commercial themes and additional components.

Skills: Node.js, Express, Mongoose, MongoDB, Bootstrap.

G4i S.r.l., Arcore

08/2017 – 12/2017

Software Consultant, Full Stack Developer

Renewable energies

Development of a full stack web application. Consulting and organising developers in other projects. Setting and teaching about new workflows.

Skills: Node.js, Express, Passport Authentication strategies, Mongoose, Bootstrap, API development.

IMPRECOM S.r.l., Monza

09/2014 – 08/2020

IT Consultant

Construction

Freelance. Consulting and Sysadmin tasks: maintaining and configuring computers and the network. Designing and maintaining the company website.

Skills: Windows, Wordpress, PHP

PUBLICATIONS

The Challenge of Digital Preservation at CERN

PV2023 Conference

This paper outlines the challenge of preserving the vast and diverse amount of digital content generated by the CERN community. First, we define the initial scope of preservation, giving an overview of the digital repositories selected for developing an OAIS-compliant archive at CERN. We explain in the fundamental components of a digital preservation system and how they are being implemented in our solution. Next, we introduce the CERN Digital Preservation platform, which is designed to orchestrate these components and enable existing information systems to adopt a preservation strategy. We highlight how existing tools and digital preservation solutions, such as Archivematica, are being integrated into this platform. I presented this work at the PV2023 conference with a talk ([a recording can be found here](#)).

LANGUAGES

Italian (native), English (full professional proficiency), French (limited working proficiency), Portuguese (beginner).

EDUCATION

Cloud Native Computing Foundation (CNCF)

2024

CKAD Certification, Certified Kubernetes Application Developer

Università degli studi di Milano Bicocca, Milan

2018 – 2020

Master of Science, Computer Science

GPA 3.85/4.0. Electives: Probabilistic Models for Decision Making, Software Quality, Software Process, Software Design, Machine Learning and Advanced Machine Learning.

Thesis: Modernising the CERN CMS Trigger Rates Monitoring software.

Università degli studi di Milano Bicocca, Milan

2014 – 2017

Bachelor's Degree, Computer Science

Thesis: Integer Linear Programming approaches for the DNA recombination problem.

ITCG Achille Mapelli, Monza

2010 – 2014

Science High School Diploma, Liceo Scientifico Tecnologico

University of Cambridge ESOL Examinations

2013

FCE, First Certificate in English

OPEN SOURCE

I am an advocate of the open source and free software model. I am directly involved in various open source projects, both as contributor and as an active community member.

The complete list of contributions and involvements is available on my [GitHub profile](#).

gbdev, gbadev

Node, NuxtJS, Vue.js, PostgreSQL

I serve as community manager, moderating a group of thousands retro-hardware enthusiasts, while leading the development of a number of software and documentation projects. Recent efforts consist in preservation, hardware research, production and maintenance of quality documentation and development of full stack applications. I'm also managing the cloud infrastructure hosting these projects and I'm in charge of organising community events attracting commercial sponsors and press interest.

Homebrew Hub

Django, Vue.js, NuxtJS

A platform to digital preserve "homebrews", patches and hackroms for old game consoles. Provides community submission, tagging and rating features. The project mainly consists of an Django application exposing an REST API. The database is community maintained (and auditable) on a Git repository. A frontend in Nuxt (Vue server-side rendered), showcases those entries and, thanks to a WebAssembly build of an emulator, allows the native reproduction of the content.

dailyProgrammer

Javascript, Android

An app for coders, developers or students: daily coding challenges for learning, refreshing or just for fun. 20K total downloads and 7K weekly users on Android Devices and more on the [web version](#). Reddit JSON API, MaterializeCSS, responsive design, web wrapper (with a Javascript interface to use native functionalities) as Android app.

SELECTED PROJECTS

Kalman Filter

Vue.js

Interactive and real time 2D simulation of the Kalman Filter in use to reduce statistical input noise. (University project)

Physarum

Vue.js, Unity3D

A simulation of Physarum polycephalum, a "smart slime mould" able to solve mazes. (University project)

Amazon Reviews Analytics

Python, Pandas, Vue.js

Analytics, data exploration and visualisation, sentiment analysis and topic analysis (LDA) on Amazon reviews. Features a web demo with interactive plots. (University project)

HOBBIES

Skiing, typography, retro computing, traditional and drone photography. Digital preservation and science communication.