

# Software Engineer

Github: <https://github.com/CaoKha>  
Portfolio: <https://caokha.com/Portfolio>



## Technical Skills

**Languages:** Rust, Python, C++, C, JavaScript, TypeScript, HTML, CSS, SQL

**Frameworks:**

**Rust:** Leptos, Axum, Tonic, Tauri

**Python:** FastAPI, Django

**Typescript:** Angular, React, Nuxt

**Databases:** PostgreSQL, MongoDB, MySQL, SQLite

**Testing:** Postman, Swagger, Playwright, Pytest, Tox

**Cloud:** AWS, Azure

**Tools:** Neovim, Visual Studio Code, Obsidian, Jira, Confluence

**CI-CD:** Docker, Gitlab-CI, Github Actions, Kubernetes, Azure Pipeline

**Build tools:** Cargo, Makefile, Bazel

**Versioning:** Git

**System:** Linux, Mac OS, Windows



## Education

09 - 2017 -  
02 - 2018

### Master of Science: Computer Science And Programming

Loughborough University - Loughborough, England

09 - 2014 -  
09 - 2019

### Master of Engineering: Mechatronic Engineer

University of Technology of Compiègne – Compiègne, France



## Work Experiences

09 - 2023 -  
present

### Backend Software Engineer

Allianz Trade, Paris

**Project 1:** Migrating version control from Excel to Git

**Project 2:** Building data pipeline, monitoring tool for data scientists

#### Tasks

- Daily meeting participation
- Agile methodology
- Ticket management and bug tracking on Gitlab and Jira
- Documentation

#### Data analysis with Python

- Analyzing, extracting information from Excel, PDF documents using open source LLM from Hugging Face
- Optimize sentences-transformer model for data scientists
- Building data pipeline with PySpark and Apache Kafka
- Exposing data services through APIs using FastAPI

- Building monitoring tool, edge case analysis with Prometheus and Grafana
- Implementing rollback policy for any failure transactions

#### **CI-CD development with Rust**

- Analyzing PLM documents, convert excel tables into parquet files using Polars.rs
- Developing and optimizing existing data infrastructure profiler using Grafana Pyroscope
- Improve data scientist workflow by building CLI tools with Rust

#### **Legacy development with Rust**

- Developing linking algorithm in order to create a git history graph
- Automating the algorithm for many legacy projects
- Optimizing, refactoring the codes
- Making the code platform-independent

#### **Backend development with Python**

- Developing REST API with FastAPI
- Building and deploying CI-CD for on-premise infrastructure using Ansible and Gitlab
- Implementing event-driven architecture with Apache Kafka
- Optimizing, refactoring legacy code
- Building and deploying CI-CD for on-premise infrastructure using Ansible and Gitlab

#### **Backend development with Rust**

- Developing GRPC, Kafka consumer with Axum and Tonic
- Domain driven design with cargo workspace.

#### **Development stack**

- Programming Languages: Rust, Python, C, Batch Script, Shell Script, Makefile
- Frameworks & Libraries:
  - **Rust:** Polars, Git2, Axum, Tonic
  - **Python:** Pandas, FastAPI, Kafka, PySpark
  - **Javascript/Typescript:** Grafana
- CI-CD: Git, Docker, Docker Compose, Makefile, Cargo
- Tools: Neovim, Visual Studio Code, Gitlab, Github
- OS : Windows (WSL), Redhat
- Project Management: Jira
- Working Language: French, English

09 - 2021 -  
09 - 2023

### **FullStack Developer Python/Angular/React**

French Football Federation, Paris

**Project 1:** Overhaul of a web application for football clubs management

**Project 2:** Development of a web application for online membership payment

**Project 3:** Development and maintenance of user dashboard for many internal applications

#### **Tasks**

- Daily meeting participation
- Agile methodology
- Ticket management and bug tracking on Azure Devops and Jira
- Documentation with mdBook and Confluence

#### **Front-end development with Angular**

- Development of UIs in Angular, HTML5/CSS3, TypeScript
- Data prefetching with Resolver, protecting private pages with Guard
- Refactoring class objects into functions, adjusting data structure methodology from Inheritance to Composition
- Responsive integration with CSS3, SCSS, Angular Material, Bootstrap
- Consumption of Rest APIs with HttpClient, RxJS Observables
- State management with Observables, BehaviorSubject, Subject from RxJS
- Implementation of UX/UI animations

#### **Front-end development with React**

- Development of UIs in ReactJS, HTML5/CSS3, TypeScript
- Responsive integration with CSS3, SCSS, Mui, Tailwind CSS

- Consumption of Rest APIs with Axios
- State management with useContext
- Lazy-loading for heavy modules

#### **Back-end development with Python/FastAPI**

- API development with FastAPI
- API visualization with Swagger
- Database mapping with SQLAlchemy
- Query Optimization
- Optimization of server memory for file management

#### **Test Implementation**

- API functionality testing with Postman
- E2E Front-end with Playwright
- Back-end tests with Pytest

#### **Continuous automation and deployment**

- Version control with Git
- Pull Request on Azure Repos
- CI-CD on Azure DevOps
- Containerization with Docker

#### **Development stack**

- Programming Languages: Python, TypeScript, Javascript, HTML5, CSS3, SQL, Shell
- Frameworks & Libraries: Angular, Bootstrap, FastAPI, ExpressJS (NodeJS)
- Web service: REST
- CI-CD : Docker, Kubernetes, Git
- Tests : Postman, Playwright, Pytest
- Database : Postgres, MongoDB
- Tools: Neovim, Visual Studio Code, Azure Repos, Github, Postman
- OS : Linux, Mac OS
- Project Management: Jira
- Working Language: French

09 - 2020 -  
06 - 2021

### **Data Engineer / Data scientist - Python**

Fintricity, England

**Project** : Weed Classification

#### **Tasks**

- Estimation and breakdown of User Stories into sub-tasks
- implement Proof Of Concept (POC) of deep learning method in weed classification

#### **Data Analysis and deep learning model development with Python**

- Development of Proof of Concept (POC) with Jupyter Notebook and Fast.ai
- Data extraction and analysis with openCV
- Testing different deep learning models (MobileNetV3 vs ResNet50)
- Implementing model in AWS with Python SDK Boto3

#### **CI/CD**

- Version control with Git
- Integration with AWS Lambda
- Containerization with Docker
- Project management with Jira
- Documentation with Confluence

#### **Development stack**

- Programming Languages: Python
- Frameworks & Libraries: NumPy , Pandas, Fast.ai, TensorFlow, Keras, PyTorch
- Tools: Visual Studio Code, Git
- OS: Linux, Mac OS
- Project Management: Agile, Jira
- Working Language: English



## **Academic Experiences**

- 10 - 2019      **3rd Winner of Créathon UTC Event**  
Compiègne, France
- Project:** Algae-based CO2 Filter for Cars  
The product aims to reduce CO2 emissions from vehicles while also generating biomass. Targets include old cars and individuals who cannot afford low-emission vehicles.
- 02 - 2019 -  
08 - 2019      **Robotic Engineer Intern**  
Trimble, Nantes, France
- Project:** Camera and Inertial Sensor Synchronization  
Interpolating data received from the Realsense D345 camera and DMU11 using SLERP and publishing it on the Robotic Operating System (ROS). The program is written in C++.
- 10 - 2018      **Special Prize Winner of UTC Hackathon**  
Compiègne, France
- Project:** LED Animated Clock  
Using Arduino Uno to program LEDs and a drill to rotate them animating a clock.
- 02 - 2018 -  
08 - 2018      **Process Engineer Intern**  
Valeo, Reims, France
- Project:** Radiator Crimping Inspection with Four Cameras  
Designed accessories for the inspection machine using Catia v5. Drafted the user guide and safety documentation for the machine.
- 10 - 2016      **UTC Hackathon**  
Compiègne, France
- Project:** Smart Refrigerator  
Creating an intelligent program that assists the bartender in organizing beer in the refrigerator.
- 01 - 2016 -  
02 - 2016      **Print Shop Operator**  
L'imprimerie de Compiègne, France
- Job:** Temporary Worker  
First professional experience. Gained teamwork experience.