Alexandre PERROT

Fullstack Software Engineer

Problem Solving **Critical thinking** **Flexibility** **Team Player** **Initiative** **Creativity**

Info

+33 6 23 44 28 20
alexandre.perrot@gmail.com
aperrot.fr
github.com/AlexPerrot
Bordeaux, FR

French (native), *English* C1
Hobbies: Cinema, video games, music, gardening, 3D printing

Education

2014-2017 **Ph.D in Computer Science**
LaBRI · University of Bordeaux
Big Data Visualization

2011-2013 **Master's Degree in Software Engineering**
· University of Bordeaux
Advanced Software Engineering and Agile project management

2008-2011 **Bachelor's Degree in Computer Science**
· University of Bordeaux

Skills

Programming Languages

- ★★★★★ Python
- ★★★★☆ Java, Scala
- ★★★★☆ Javascript, Typescript
- ★★★★☆ C, C++
- ★★☆☆☆ C#

Web

- ★★★★☆ HTML / CSS
- ★★★★☆ Vue.js
- ★★★☆☆ React
- ★★★☆☆ Node.js

Data Engineering

- ★★★★★ Hadoop
- ★★★★★ Spark
- ★★★★☆ SQL
- ★★★☆☆ ElasticSearch

Tools **Docker** **Git** **AWS** **GCP** **Azure** **Ansible** **VSCode**

Work Experiences

feb 2019 - Present

R&D Software Engineer — CATIE · Talence

Python **Typescript** **Vue.js** **Sklearn** **PyTorch** **ML** **Pandas** **Numpy** **Jupyter** **AWS**

Project management, Data Engineering, ML, ops, backend and frontend software engineering for innovation projects in the Data & Algorithms business unit.

- Created a visual analytics tool to help with fault diagnosis and predictive maintenance using sensor data :
  - Data analysis and ML with **Pandas** and **scikit-learn**
  - **Typescript** and **Vue.js** Webapp, with **D3.js** for viz.
  - Adopted by Customer Service team at the client company
- Created and maintained of a **python** toolbox allowing fast iteration and evaluation of **RAG pipelines** and **AI agents** within the CATIE server infrastructure.
  - Used by Data Engineers and Data Scientists on the team.
  - Supports **ChromaDB**, **QDrant** and **Llama index** as indexes, **Ollama** for LLMs inference, **LangChain** and **Langfuse** for evaluation.
- Created and maintained of a **Python** toolchain for forest inventory and tree measurment from 3D LiDAR point clouds. Allows automatic GPS tree location, identification and size measurement for faster forest inventory.
  - Implementation of 3D LiDAR data processing algorithms, ML for tree detection, segmentation, and measurement.
  - Automatic GPS alignment of plot data and tree positions
  - CLI interface with **argparse** and GUI with **Tkinter**
  - Used by dendrometry experts at the client company
- Created of a visual analytics tool to explore online bets history in order to detect dangerous players.
  - Big Data processing and analysis with **Pyspark**, **Pandas** and **sklearn**
  - **Flask** and **ElasticSearch** for backend, **Javascript**, **Vue.js** and **D3.js** for frontend.

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- Developped PodWords : visual introduction to **NLP**, text embeddings and AI explainability.
- Catie Robotics : Developped a Speech-to-text *Python* tool for real-time user interaction during RoboCup 2023, using **OpenAI Whisper**, running on an embedded **Nvidia Orin**.
- Server Administration : managing our on-premise infrastructure : *Docker* deployments and *Ansible* scripts.

sep. 2018 - jan. 2019

Data Engineer — COGNITEEV · Bordeaux

Spark **Java** **GCP** **ElasticSearch** **BigTable**

- Responsible for developping data pipelines with **Spark** and **Java**.
- Improved scalability of data processing using *Google BigTable*.

june 2018 - sep. 2018

Fullstack Software Engineer - Fixed-term contract — LABRI · Bordeaux University

Javascript **HTML** **CSS** **Bootstrap** **Node.js**

- Development of an interactive web-app to explore French University Students mobility through Parcoursup affectations.
- Collaboration with French Ministry of Higher Education

feb. 2018 - apr. 2018

Engine Programmer - Fixed-term contract — ASOBO STUDIO · Bordeaux

C++ **Bing Maps** **Azure**

- Engine programmer on Microsoft Flight Simulator.
- Worked on Map Tiles network transfer optimisation.

oct. 2017 - jan. 2018

R&D Software Engineer — JOBIJOBA · Pessac

Java **Python** **ElasticSearch**

- Worked on integrating **Java** data pipelines for job offers indexation into **ElasticSearch**.
- Implemented *OCR* text extraction for CV matching.

sep. 2014 - sep. 2017

Ph.D. Student — LABRI · Bordeaux University

C++ **OpenGL** **WebGL** **Javascript** **Spark** **Java** **Scala** **Python**

Academic research on **Big Data Visualization**, under the supervision of *David AUBER*

- Developed novel algorithms for batch and streaming data indexation, using **Spark** and **HBase** : processing 2.7B gps points in under an hour.
- Developed a **Javascript** library for big data web visualisation : **C++/OpenGL** core compiled to **Javascript/WASM/WebGL** using *Emscripten*.
- Contributed to the Open Source compiler Emscripten.
- Presented at several International Conferences.
- Best Paper Award LDAV 2015
- Teaching : **Javascript**, **OpenGL**/**WebGL**, **Hadoop MapReduce**, **HBase**, **Spark**, **Neo4j**

sep. 2013 - sep. 2014

Software Engineer — LABRI · Bordeaux University

C++ **Java** **Javascript** **OpenGL** **GraphDB** **Tinkerpop** **Hadoop**

- Developped scalable algorithms for Big Data processing.
- Deployed Hadoop and Spark cluster
- Developped a graph visualisation engine in **Javascript** for web browser, reusing the **C++** Tulip core library
- Large graph data processing with **Tinkerpop Gremlin** and **Titan** graph database.

apr. - aug. 2013

Intern — SOPRA · Mérignac

C# **.NET** **TFS** **Git**

App development for Naval Group

may - aug. 2012

Intern — LECTRA · Cestas

Java **HTML**

Plugin development for automated test correction on IBM rational functional tester

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