LOÏC COYLE

Machine Learning Engineer | Software Engineer

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ABOUT ME

Machine Learning Engineer with 5+ years of experience at CERN developing advanced ML solutions for complex systems. With expertise in full-stack development (Python/TypeScript/Rust), I excel at solving complex problems through data-driven strategies. Passionate about open-source and continuous learning, I thrive on tackling challenging problems and building innovative tools that bridge cutting-edge machine learning with robust software engineering.

WORK EXPERIENCE

Associate Researcher - Applied Machine Learning

European Organization for Nuclear Research (CERN)

2019 – 2024 | Geneva, Switzerland

- Used Machine Learning techniques to model, improve the understanding of and minimize particle losses occurring in the Large Hadron Collider (LHC).
- Designed, trained and evaluated a number of Machine Learning models targeting various aspects of the LHC:
  - Multivariate time series surrogate modelling of the LHC's instantaneous particle loss rate.
  - Anomaly detection models to identify and cluster LHC instabilities.
  - Machine Learning models for Unidentified Falling Object event detection.
- Developed purpose built, open-source, Python tooling to build ETL pipelines and visualisation.

Python | Tensorflow | PyTorch | Pandas | Spark | Data Visualisation | Data Science | Gaussian Processes | Docker | Scientific Communication | Kalman Filters | Statistical Methods | Generative Models

Research Intern - Applied Machine Learning

European Organization for Nuclear Research (CERN)

Feb 2018 – March 2019 | Geneva, Switzerland

- Developed surrogate models of the LHC instantaneous particle losses with the goal of optimizing LHC operations.
- Analysis of LHC experimental data to further the understanding of particle losses and develop models of the LHC using both statistical analysis and Machine Learning techniques.

Python | Tensorflow | XGBoost | Numpy | Pandas | Matplotlib

Research Intern

UK Atomic Energy Authority - Culham Center for Fusion Energy

May 2017 – August 2017 | Culham, UK

- Combined a variety of simulation software such as GEF, Talys and Geant4 using custom written python tooling to generate nuclear reaction datasets.

Python | Nuclear Data | Data Analysis | Data Visualisation | Geant4

PERSONAL PROJECTS

Ethergraph - Graph based crypto-forensics web platform (WIP)

TypeScript | React | Next.js | Front-end dev. | web3 | CD | PostgreSQL

ethergraph.vercel.app

TinyTicker - Raspberry Pi powered e-paper financial data ticker

Python | Flask | Linux | CI/CD | Front-end dev. | Numpy | TDD

loiccoyle/tinyticker | loiccoyle.com/tinyticker

Phomo & Strandify - Rust/Wasm photo mosaic & string art web apps

Rust | Wasm | Front-end dev. | TypeScript | React | Vite | CI/CD

loiccoyle.com/phomo-rs | loiccoyle.com/strandify

See my other open-source projects at loiccoyle

EDUCATION

Master's in Reactor Physics and Nuclear Engineering

Grenoble Institute of Technology - Phelma

2015 – 2018 | Grenoble, France

- Includes an ERASMUS student exchange with the Ecole Polytechnique Fédérale de Lausanne in Switzerland.

Bachelor's in General Engineering

Grenoble Institute of Technology - Phelma

2015 – 2016 | Grenoble, France

SOFTWARE SKILLS

Python | Typescript | Rust | C/C++ | Machine Learning | Data Engineering | PyTorch | TensorFlow | CI/CD | Data Science | Data Visualisation | Numpy | Pandas | Matplotlib | SciPy | SQL | DB Design | React | Qt | git | Containers | Linux | Fullstack Dev.

SOFT SKILLS

Rigour | Autonomy | Result Oriented | Active Listening | Analytical Thinking | Scientific Communication | Team Spirit | Independent | Continuous Improvement

LANGUAGES

English
French
German

INTERESTS

- DevOps, MLOps, Algorithmic art
- Chess, music, piano
- Snowboarding, cycling, hiking, climbing

REFERENCES

Available on request.