Mathieu Nalpon

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EDUCATION

CentraleSupélec - Paris Saclay University — Paris, France
Master's degree in Mathematics and Data Science — *Sept. 2019 – Oct. 2022*

Cachan School — Cachan, France
Bachelor of Engineering — *Sept. 2016 – July. 2019*

EXPERIENCE

Weborama — Paris, France
Machine Learning Engineer — *Oct. 2023 - Current*

- **WeboMind - URL recommendation**: Contextual targeting tool generating lists of relevant URLs to improve conversion rates.
  - Benchmarked and embedded crawled url web pages.
  - Used vector databases (Milvus, FAISS, ElasticSearch) to perform semantic and hybrid search.
  - Optimized latency and storage by testing and choosing a relevant indexing, product quantization and vector quantization method.
  - Fine-tuned a LightGMB model with Optuna to have a tailored reranker for our use-case.
  - Deployed into production the system with APIs and monitoring.

- **AutoML - Lookalike tool**: Deployment of a tool to predict user conversion rates based on the upcoming advertising campaign.
  - Created a package to manage SQL queries and data processing for Snowflake.
  - Added several machine learning models for conversion prediction and fine-tuned with Optuna.
  - Orchestrated jobs with Airflow and monitored metrics (ML: Precision ROC; API: latency, memory)

ArianeGroup Defense & Space — Paris, France
Data Scientist — *Oct. 2020 - Oct. 2022*

- **Autonomous neutralization of a launcher in flight**: Researched on state-of-the-art solution for autonomous neutralization of a launcher in flight.

- **Refining the time before neutralizing a launcher in flight:**: Taking into account the fallout from debris from the neutralized launcher to refine the flight time of a launcher.

- **Prediction of the time left for an off-trajectory rocket before neutralization**: Created from scratch an algorithm that computes, given a trajectory and a specific deviation in 3D space, the time left for a rocket before it's neutralization.

PROJECTS

- **Fine-tuning SAM (Meta) for ring segmentation**: Used a Lora adapter with a hand-made dataset to solve the problem of segmenting single and pair of rings which was an issue with SAM 1.

TECHNICAL SKILLS

- **Languages**: Python, Bash, JavaScript, C++

- **Libraries**: PyTorch, Optuna, Ray, FAISS

- **Frameworks & Tools**: Git, Docker, Kubernetes, MLFlow, ElasticSearch, Milvus, Airflow, Sentry, Prometheus, Grafana, Snowflake, Google Cloud, ClickHouse