

## Yoan Charpentier - Candidate for PhD position in Mathematics

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### CONTACT INFORMATION

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### INTERESTS

Clustering methods, dimension reduction models, Bayesian statistics, statistical inference

### EDUCATION

**Polytech Clermont**, Aubière, France **September 2022 - 2025 (expected)**

Engineering M.S. Mathematics Engineering and Data Science

- Specialty: Deep Learning (GAN, CNN, VAE) and Biostatistics (Survival Analysis)
- Relevant courses: Statistical Inference, Optimization, Algorithms

**Polytech Angers**, Angers, France **2020-2022**

Preparatory Classes, Mathematics and Physics

- Introduction to fundamental sciences including : Optics, Thermodynamics, Electronics, Chemistry, Analysis, Algebra

**Estournelles de Constant**, La Flèche, France **2019**

French Scientific Baccalaureate with high honours

- European Section : Mathematics in German
- Specialized in Engineering Sciences and Informatics

### RESEARCH AND TEACHING EXPERIENCE

**Arctic University of Norway**, Narvik, Norway

*Research Internship*

**March - August, 2024**

Dissertation Topic: “How to plan the future e-trucks infrastructural network”

Creation of a model that jointly optimizes logistic infrastructure placement and the charging station placement so that electric trucks can drive along a logistic network.

- Wrote a state-of-the-art on covering models and infrastructure placement in a logistic chain
- Implemented such models in AMPL
- Supervised by Hao Yu, Github project link

**Akkodis**, Aubière, France

*AI Internship in R&D department*

**June - July, 2023**

Introduction to research

- Made a literature search and a state of the art on Foundation Models. Identification of threats and opportunities of such models
- Participated in Mosquito species recognition task challenge. Used computer vision techniques to detect and classify small objects using TensorFlow

**Polytech Angers, University of Angers**, Angers, France

*College Level Tutoring*

**December 2021 - March 2022**

Taught 16 hours of courses for students in preparatory classes at Polytech engineering schools under the supervision of the department head (Algebra, Applied Mechanics, Analysis, Physics)

### PROJECTS

**Heart Failure Survival Analysis**

*Supervised by Anne-Francoise Yao*

**September, 2024 - January, 2025**

Survival analysis performed on heart failure follow-up study. Performed : Kaplan-Meier estimation, goodness of fit tests, Cox model, Decision Tree learning. Github project link

### **AI applied to Optimization**

*Supervised by Teddy Virin (Michelin)*

**October, 2024 - January, 2025**

Michelin project. Performed Bayesian optimization in a context of numerically modeling tires. Then, we used these parameters to train a car agent riding on a circular race circuit using the DDPG reinforcement learning algorithm. Github project link

### **Profiling Soccer Players' Positions**

*Supervised by Stéphanie Léger*

**September, 2023 - February, 2024**

Clustering of players' positional style. Provided additional information on the characteristics of positions in a football team by creating "sub-positions".

### **Project Monitoring (team of 7)**

**January - June, 2023**

Multifactor watch (legal, environmental, technical, economical, ...) on a customizable mechanical keyboard project. Entrepreneur First Prize (Clermont Auvergne PEPITE)

### **Niger Cartography**

*Supervised by Marie-Francoise Roy (University of Rennes 1)*

**January - June, 2022**

From a given database of Niger's facilities, our program generates an interactive map that represents the database (JavaScript, PHP, Nginx). Github project link.

## **PROFESSIONAL EXPERIENCE**

### **Crédit Agricole Centre France, Clermont-Ferrand, France**

*Data Miner*

**September, 2024 - 2025**

Work/study training program.

- Created appetency scores for bank offers and products in SAS
- Created clients' profile typology (clustering methods)
- Manipulated large data warehouses in SQL (*query optimization*)
- Communicated study results

## **COMPUTER SKILLS**

- **Python** (advanced use) including libraries SciPy, PyTorch and TensorFlow
- **R** (advanced use) including libraries Survival, XGBoost, randomForest, MASS
- Languages: SAS, SQL, Java, C++, Fortran, C
- Algorithms:
  - Implementation in Python of several basics algorithms from Sedgewick Algorithm book (sort, search, graphs)
  - Experience programming Markov Chain Monte Carlo simulations of Bayesian posterior distributions in SAS
  - Thermic equations simulation in Fortran
- Operating Systems: Windows, lesser exposure to Unix/Linux
- Collaborative tools: Git

## **INVOLVMENTS**

- Class Delegate since 2022
- Environment: Ambassador for Ma Petite Planete, a worldwide environmental challenge game
- Treasurer and Financial Manager for the Student's Business Office of Polytech Clermont (IDP Ingénierie)