

# ANTOINE SCHOONAERT

+33 6 52 83 50 43 ◇ Paris, France

[schoonaert17@gmail.com](mailto:schoonaert17@gmail.com) ◇ [Linkedin](#)

PhD candidate in Applied Mathematics

## EDUCATION

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**PhD in Applied Mathematics**, *École Nationale des Ponts et Chaussées - ENSAE - EDF* 2024 - 2027, Paris

**MSc. MVA (Mathematics, Vision, Learning)**, *École Normale Supérieure Paris Saclay* 2023 - 2024, Paris

First semester courses : Time series, Computational statistics, Convex optimization, Geometry data analysis, Introduction to digital imaging. Projects :

- Vector-Autoregressive models via tensor Tucker decomposition
- Online EM Algorithm for Hidden Markov Models
- Film grain model, from a stochastic method to a deep learning method
- Supervised modeling of the price differential between the intraday market and the SPOT market for energy markets

**Master of Engineering**, *École Nationale Supérieure des Mines de Saint-Etienne* 2021 - 2024, Saint-Etienne

Curriculum "Ingénieur Civil des Mines (ICM)". Ecole des Mines de Saint Etienne is an engineering school ranked in the top 10 out of over 200 engineering schools in France.

- Major : Data science, grade A+ (GPA : 4,33/4,33). Advanced Probability - Statistical Learning - Machine Learning and Neural Networks - Optimization and Metamodeling
- Minors : Image Processing, Artificial Intelligence, Operations Research and Decision Science

**Preparatory classes**, *Lycée Faidherbe* 2019 - 2021, Lille

Two years of undergraduate studies in mathematics, physics and chemistry. Intensive preparation for highly selective entrance exams to French Grandes Ecoles d'Ingénieurs. 1st year : MPSI, 2nd year : MP\*.

## SCHOOL PROFESSIONAL EXPERIENCE

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**Machine learning research internship**, *EDF Lab* April - September 2024, Palaiseau

Prediction of the number of outages on the French power grid during heatwaves using machine learning (deep learning and random forest). Improved accuracy from 88% to 97%.

**NLP research internship**, *University of León* June - August 2023, León, Espagne

Study of deep learning methods to increase the quantity of short text databases (SMS or short e-mail type) with the aim of training an RNN classifier. Application to the classification of fraudulent messages in the banking sector.

**Entrepreneurial project**, *Mines de Saint-Etienne* Mars - May 2023, Saint-Etienne

Development of an exchange platform including trading tools for the energy markets (intraday and day-ahead markets).

**Technical project**, *Mines de Saint-Etienne* September 2022 - January 2023, Saint-Etienne

Implementation of a GAN (Generative Adversarial Networks) for the reconstruction of images produced by X-ray tomography. Optimization of basic GAN and improvement of convergence speed using a convolutional Wasserstein GAN.

## PERSONNAL PROFESSIONAL EXPERIENCE

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**Volunteer work**, *Société Saint-Vincent-de-Paul* January 2022 - May 2023, Saint-Etienne

Tutor for a high school student, homework help. Organizing "maraudes", distributing basic necessities to people in need.

**Lifeguard**, *Domaine des Baux* July - August 2022, Roquebrune-sur-Argens

Responsibility for holidaymaker safety and compliance with rules. Swimming pool for 200 people.

**Mechanic's helper**, *Autocars Schoonaert* July - August 2017, 2018, 2019, Holque

Perform basic mechanical tasks (oil changes, prepare technical inspection).

## SKILLS AND INTERESTS

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**Languages** French: native, English: B2, German: B1

**Programming languages** Advanced level: Python (Pytorch, Tensorflow, etc.), R, Latex, Intermediate level: C, Matlab, Java, SQL

**Sport** Swimming, French university team championship

**Safety** BNSSA (lifeguard diploma), PSE1 (first aid diploma), SST (first aid at work diploma)