



Mehdi Zouitine



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EDUCATION

MSc 2. Statistics – Toulouse School of Economics

2020–2021



- Statistics
- Optimisation
- Machine learning and deep learning
- Reinforcement learning
- Graph theory
- Software engineering

MSc 1. Applied Mathematics – Université Paul Sabatier

2019–2020



- Image and signal processing
- Optimisation
- Programming
- Probability
- Statistics
- Scientific calculation

BCs. Pure Mathematics – Université Paul Sabatier

2016–2019



- Topology
- Group Theory
- Calculus
- Linear algebra
- Probability
- Real and complex Analysis
- Differential equation

BCs. Computer science – Université Paul Sabatier

2016–2019



- Programming
- Data structure
- Parallel computing
- System
- Algorithm complexity
- OOP/FOP
- Graph theory

WORK EXPERIENCE (4 PREVIOUS POSITIONS)

Institute of Technology (IRT Saint Exupéry) – Toulouse

09/2020–10/2021



- Research in Multi-agent Deep reinforcement learning
- Bibliography and state of the art
- Implementation of reinforcement learning algorithm : PPO, A2C
- High Performance computing
- Implementation of gym multi-agent environnements



- Deep learning on flight test data
- Sensor value prediction using MLP and LSTM
- Study the efficiency of Siamese networks for the detection of anomalies in time series
- Communication and presentation of results to industry experts

Toulouse Institute of Computer Science (IRIT) – Toulouse

02/2019–06/2019



- Formal verification of deep neural network
- Study of a method based on Lipschitz networks to ensure their robustness.
- Software development and testing in Python

Toulouse Mathematics Institute (IMT) – Toulouse

06/2019–09/2019



- Problems of mathematic tessellation
- Initiation to research
- Reading scientific paper
- Software development and testing in Python

SIDEWORK

Open source software



I develop various projects related to machine learning. In particular, I actively maintain `gym-ma-toy`, which is a Python library for RL-environment. I have also developed several deep learning architecture in Pytorch (LSTM, GAN, transformers)

Competitions



I participate in a lot of data science competitions. In particular the international olympiad which gathers students and PhD students from all over the world. I enjoy competitive data science and I find it to be a great way to sharpen my skills

Reading club Blogging



I am part of a community with which we share our knowledge around reading club. Topics range from pure math, optimization, deep learning and reinforcement learning. I have also started a blog where I talk about machine learning and applied maths.

SKILLS

Programming	Experienced in Python
Mathematics	Knowledge and solid experience in many areas of mathematics
Data analysis	Numerous case studies done during university projects, internships, and competitions
Image, signal	Solid theoretical knowledge in image and signal processing
ML, DL and RL	Solid knowledge of the concepts and hands-on experience (Pytorch)
Code quality	Healthy habits regarding coding conventions, documentation, and testing
Writing/reading	Keen interest in making documentation and writing blog posts. Reader scientific paper
Languages	Fluent French. Professional english

Finalist of the International Data Analysis Olympiads (IDAO)

2020

- IDAO is an international competition of machine learning for researcher, engineer and students from all over the world
- More than 2700 participants from 83 countries
- Ranked **7th out of 2783** participants
- The final should have taken place in russia, it has been postponed and will take place online in november 2020 (I'll do everything we can to finish first!)

1st place in the Continental hackathon 2019

2019

- 2 days machine learning competitions to predict the energy consumption of an electric car.
- Meeting with Continental's teams and presentation of our solution to Continental's leaders.

REFERENCE

Fabrice Gamboa : Professor in Mathematics at the University of Toulouse Paul Sabatier and ANITI researcher at IMT (Toulouse institute of Mathematics) laboratory (fabrice.gamboa@math.univ-toulouse.fr).

Martin Strecker : Professor in computer science at the University of Toulouse Paul Sabatier and researcher at IRIT (Toulouse institute of computer science) laboratory (martin.strecker@irit.fr).

HOBBIES

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| — Teaching | — Cooking | — Programming |
| — Boxing | — Reading | — Maths |