Theo Gachet

Student in Machine Learning at Polytechnique Montréal

Double MSc student passionate about computer science and mathematics,
I wish to expand the frontiers of space exploration using Artificial Intelligence.

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Feel free to visit my portfolio :

theogachet.com

Professional Experience

Machine Learning Engineer · European Space Agency (ESA) April 2024

- Implemented techniques related to image segmentation and uncertainty quantification for space exploration. Applied Reinforcement Learning to enable rovers to navigate autonomously on Mars and ensure the mission's success.

Deep Learning Research Scientist Intern · CNRS – Inria Paris July 2023

- Optimized the effectiveness of Natural Language Processing by implementing Transformers and attention mechanisms inspired by human cognition.

Freelance Project Researcher · Ministry of the Armed Forces July 2023

- Selected to undertake an analysis of immersive technologies (VR, AR, and MR).
- Conducted an in-depth study on their functional principle, their applications but also future possibilities in the fields of defense, security, and civilian use.
- My research findings are now used by the Armed Forces (Army, Navy, Air Force).

Machine Learning Research Scientist Intern · CNRS – Inria Paris January 2023

- Uncertainty quantification in convolutional neural networks.
- Reduction of epistemic and aleatoric uncertainties using Ensemble techniques and Bayesian methods (Monte Carlo dropout, variational autoencoders, etc.).

Education

Master's Degree in Machine Learning · Polytechnique Montréal Sept 2024

- Double degree in Machine Learning at Polytechnique Montréal, one of the top university in Canada. My coursework has a strong research focus and includes:

  - Machine Learning
  - Natural Language Processing
  - Reinforcement Learning
  - Mathematics and Research

Master's Degree in Computer Science · Mines de Saint-Etienne Sept 2022

- GPA (2022, 2023, 2024) : 4.0 / 4.0
- Ranked as one of the top graduate schools of engineering in France, the Ecole Nationale Supérieure des Mines de Saint-Étienne is one of the French "Grandes Écoles" and is dedicated to training highly qualified engineers.

  - Computer Science (Python, C, C++, Machine Learning, algorithmics, RISC-V)
  - Electronics, robotics and nano systems (assembler, VHDL, SystemVerilog)

French "Classes Préparatoires" · Lycée Saint-Louis, Paris Sept 2020

- Intensive two-year scientific cursus preparing for the competitive exams to enter the very selective and prestigious engineering schools known as Grandes Écoles.

Selected Projects

AlexIA: Financial Data Analysis using AWS and Generative AI November 2024

- Real-time financial platform powered by AWS using LLM and generative AI
- Portfolio optimization, economic synthesis, sentiment analysis, board profiling

Image Segmentation and Uncertainty Quantification for Mars Rover July 2024

- Image segmentation and uncertainty quantification for space exploration
- Reinforcement Learning to enable the rover to autonomously determine its path

See more projects on my Portfolio

Skills

Python, TensorFlow, PyTorch, AWS, C, C++, SQL, Docker, Git, Julia, HTML, CSS, Jupyter, MatLab, Cybersecurity, Office, Sony Vegas

French	English	Italian
native	fluent	proficient
	TOEIC 970/990	
Chinese	Russian	Arabic
intermediate	beginner	intermediate

Honors and Awards

High School Scientific Diploma
Ranked 1st in France (mark: 20.6/20)

AWS Datathon – Finance & Generative AI
Ranked 1st among 160+ students from Canada

ESA Academy – Cybersecurity Training
30 students selected from all over Europe

Python Optimization Contest
Ranked 1st among 95+ students

3D Modeling Competition
Ranked 1st - by the Robotics association

Robotics Hackathon
Ranked 2nd – by ST Microelectronics

National Chemistry Olympiads
Finalist in High School

Courses and Certifications

25+ Certifications (see my LinkedIn for more details)

Machine Learning - Specialization
Stanford University and Coursera

Generative AI - Specialization
Google Cloud and Coursera

Machine Learning on AWS
Amazon Web Services (AWS)

Data Analytics in Python
Meta and Coursera

Associative Involvement

Secretary General · AI Instructor
MINITEL (computer science association)

Business Manager · Head of AI
Junior Mines Provence (junior enterprise)

Head of IT Services · Web Developer
Forum Entreprise ISMIN (business club)

Innovation Manager · Head of Strategy
AREM (robotics association)

Organizer of a humanitarian trip
Solidar'ISMIN (humanitarian association)

Interests

Volleyball (played national), aviation, chess

For the French version of my resume, please click here