

THOMAS SESMAT

47 Grande Rue Nazareth ◊ 31000 Toulouse, FRANCE
(+33) · 7 · 83 · 88 · 33 · 36 ◊ tom.sesmat@gmail.com
sourisimos.github.io

EDUCATION

Toulouse Mathematical Institute (non-curricular)

Seminars

Probability, optimization, statistics

Sep 2024 - Sep 2025

Toulouse, France

National Institute of Applied Sciences

M.S. in Applied Mathematics & Engineering

Relevant coursework: High-dimensional deep learning, AI frameworks, Signal & Image Processing, Machine Learning, Data Analysis, Statistical Modeling, Continuous Optimization, Non-differential Optimization, Advanced Probability, Stochastic Processes

Sep 2021 - Sep 2025

Toulouse, France

Fabert High School

Classe préparatoire aux grandes écoles

Major in Physics & Chemistry

Minor in Mathematics & Informatics

Honorary class

Sep 2018 - Jun 2021

Metz, France

WORK EXPERIENCE

ONERA

Neural Network Internship

- Theoretical conceptualization and computational development of a mixed-weight neuro-fuzzy network
- Development of binary & continuous optimizers
- Development from scratch without using deep learning/machine learning libraries

Jul - Oct 2023

Toulouse, France

Anam'note

Web Development Intern

- Created a mind map for an electronic patient record (e-CRF)

Jun - Aug 2022

Nancy, France

VOLUNTEER EXPERIENCE

Djarama

Civic Service in Agroecology

- Vegetable cultivation, raising awareness among children

Feb - Jul 2024

Senegal

Junior INSA Service

Member of the Strategic Orientation Committee

- Provided guidance on Junior Enterprise strategy, internal audit of treasury department

Sep 2022 - 2024

Toulouse, France

Junior INSA Service

Treasurer

- Accounting and financial management, creation and delivery of treasury training courses

Sep 2022 - 2024

Toulouse, France

PROJECTS

Experimental Analyses on a ReLU-Type Network

[Pending]

Python, Keras

- Set up experiments to analyze the relationship between sample size and target function complexity in a recurrent network.
- Analyzed differences between network output and expected output based on input.
- Conducted preliminary work toward a theoretical demonstration.

Bundle of Deep Learning Projects

[Pending]

Python, TensorFlow, PyTorch

- Developed and trained a model to identify a painting's artist.
- Defined and trained a Conditional Variational Autoencoder (CVAE) on the Fashion-MNIST dataset.
- Compared different semi-supervised learning strategies for an anomaly detection task.

Film Suggestion Web Page

[Pending]

Python, PyTorch, Docker

- Built a film suggestion system based on customers' viewing habits.

Data Analysis of Paris Bike-Sharing Service

Python, Scikit-Learn, R

- Implemented dimensionality reduction algorithms (PCA, LDA), clustering methods (K-means, HAC, GMM), and advanced factorial methods (CA, MCA, MDS, NMF).
- Provided detailed analysis and interpretation for each method.

SKILLS AND CERTIFICATIONS

- Programming Languages: Python (PyTorch, TensorFlow, scikit-learn), R
- Technical content writing
- English (TOEIC 975/990)

AWARDS & ACHIEVEMENTS

Data Challenge IA Pau

2023

First place (€3000 cash prize)

- Conceptualization and development of a technical solution for a speech and video analysis tool