

Michael Etienne Van Huffel

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Education

Eidgenössische Technische Hochschule (ETH) Zurich

2022 – 2025

MSC IN STATISTICS

GPA: 5.90/6.0

- Selected courses: Guarantees in Machine Learning, Natural Language Processing, Topological Data Analysis, Statistical Learning Theory, Random Topology

Eidgenössische Technische Hochschule (ETH) Zurich

2019 – 2022

BSC IN MECHANICAL ENGINEERING

GPA: 5.38/6.0

- Selected courses: Machine Learning, Algorithms and Data Structures, Quantum mechanics, Control Systems

Work Experience

Visiting Student Researcher *Imperial College London*

Feb. 2024 – Sept. 2024

Developed an innovative framework bridging high-dimensional topological data analysis and natural language processing to detect semantic change. Our work achieved state-of-the-art performance in classical diachronic semantic change detection tasks.

Supervised by Dr. Anthea Monod (Imperial College London), Prof. Omer Bobrowski (Queen Mary University of London), Dr. Haim Dubossarsky (The Alan Turing Institute), and Dr. Markus Kalisch (ETH Zurich).

Graduate Student Researcher *ETH Zurich (remote)*

Jan. 2024 – Aug. 2024

Developed an efficient algorithm for vectorizing persistence diagrams using discrete transforms, achieving and surpassing state-of-the-art accuracy in classical graph classification and tumor particle classification tasks.

Engaged in a high-level international collaboration with Dr. Vadim Lebovici (Oxford University) and Dr. Olympio Hacquard (ASHBi Insitute, Kyoto University).

Graduate Student Researcher *ETH Zurich*

Sept. 2023 – Jan. 2024

Developed a specialized topological data analysis pipeline linking persistent homology to hierarchical clustering in Λ CDM cosmologies.

Engaged in a high-level international project supervised by Prof. Tao Hou (DePaul University) and Dr. Tim Ophelders (TU Eindhoven).

Undergraduate Student Researcher *ETH Zurich*

Feb. 2022 – Jul. 2022

Developed evolutionary algorithms for direct policy search in classical MuJoCo Reinforcement Learning tasks

Supervised by Prof. Petros Koumoutsakos (Harvard University), Dr. Georgios Arampatzis (ETH Zurich) and Dr. Daniel Wälchli (ETH Zurich, Harvard University).

Publications

Michael Etienne Van Huffel, Vadim Lebovici, Olympio Hacquard, and Matteo Palo. *Discrete transforms of quantized persistence diagrams*. In *Proceedings of the 2025 SIAM Symposium on Algorithm Engineering and Experiments (ALENEX25)*, 2025.

Teaching Experience

Statistics II

Sept. 2024 – Dec. 2024

TEACHING ASSISTANT

Zurich, Switzerland

- Instructor: Dr. Jakob Dambon
- Held tutorial lectures

Analysis III

Sept. 2022 – Dec. 2022

TEACHING ASSISTANT

Zurich, Switzerland

- Instructor: Prof. Alessandra Iozzi
- Held tutorial lectures

Models, Algorithms and Data

Feb. 2022 – Aug. 2022

TEACHING ASSISTANT

Zurich, Switzerland

- Instructor: Prof. Jens H. Walther, Dr. Georgios Arampatzis
- Designed final exam and held tutorial lectures

Analysis III

Sept. 2021 – Dec. 2021

TEACHING ASSISTANT

Zurich, Switzerland

- Instructor: Prof. Alessandra Iozzi
- Held tutorial lectures

Technical Skills

Programming Languages	Python, C, C++, R, Java, Matlab, HTML, L ^A T _E X
Tools & Technologies	Git, PyTorch, Tensorflow, SciKit, Pandas, NumPy, Gudhi, Cuda, Huggingface
Languages	Native Italian, Professional English and German, Intermediate French