Michael Etienne Van Huffel

Personal Website ◇ Mobile Phone ◇ Email

Education

Eidgenossische Technische Hochschule (ETH) Zurich **2022 – present**
MSc in Statistics *CGPA (July 2024): 5.89/6.0*
- Selected courses: Guarantees for Machine Learning, Topological Data Analysis, Statistical Learning Theory, Natural Language Processing, Random Topology

Eidgenossische 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 and similarities. 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 cosmic web evolution.
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**
Contributed to the development of evolutionary algorithms for direct policy search in Reinforcement Learning.
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. To appear.

Teaching Experience

Statistics II **Sept. 2024 – present**
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, LaTeX
Tools & Technologies	Git, PyTorch, Tensorflow, SciKit, Pandas, NumPy, Gudhi, Cuda, Huggingface
Languages	Native Italian, Professional English and German, Intermediate French