# Michael Etienne Van Huffel

⌂ Personal Website ◇ 📱 Mobile Phone ◇ ✉ Email

## Education ────────────────────────────────

**Eidgenossische Technische Hochschule (ETH) Zurich**            **2022 − 2025**
MSc in Statistics *cum laude*            *GPA: 5.90/6.0*
- Selected courses: Guarantees in Machine Learning, Natural Language Processing, Topological Data Analysis, Statistical Learning Theory, Random Topology, Probabilistic Artificial Intelligence

**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 ────────────────────────────

**Military Service**   *Swiss Armed Forces*            **Jan. 2025 − May 2025**
Completed mandatory military service as part of national duty.

**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 ΛCDM 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

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|---|---|
| **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 |