Edouard Koehn

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Education

EPFL - Ecole Polytechnique Fédérale de Lausanne — Lausanne, Switzerland
Master of Science MSc in Neuro-X - Ing. neuro-X. EPF — *Feb. 2022 – 2025*

EPFL - Ecole Polytechnique Fédérale de Lausanne — Lausanne, Switzerland
Bachelor of Science BSc in Life Science Engineering — *2017 – 2022*

Sport school, Spiritus Sanctus Brig — Brig, Switzerland
Economics High School Diploma — *2011 – 2017*

Research Experience

UCB - Univeristy of California Berkeley — August 2024 – Present
Master Thesis — *Berkeley, CA, USA*

Neural Systems and Machine Learning Laboratory (NSML)

- Developed Recurrent Neural Networks (RNNs) integrated with biologically inspired connectivity.
- Applied chaos theory to analyze and understand the system's dynamic.
- Used control theory methods to guide the system's dynamics.

EPFL - Ecole Polytechnique Fédérale de Lausanne — 2023 – 2024
Semester Project — *Lausanne, Switzerland*

Mathis Group for Computational Neuroscience and AI

- Deployed transformer-based policies for natural locomotion problems.
- Uncovered the attention and learning mechanisms of the transformer model in the context of locomotion solutions.

Medical Image Processing Laboratory (MIPLAB)

- Developed a new technique to generate individual-centered brain connectomes from diffusion MRI data.
- Applied graph signal processing techniques on white matter brain graphs

EPFL - Ecole Polytechnique Fédérale de Lausanne — 2021 – 2022
Bachelor Project Researcher — *Lausanne, Switzerland*

Medtronic Chair in Neuroengineering

- Evaluate the performance of different object detection for cortical visual prosthesis
- Applied pattern recognition techniques for the detection and classification of outdoor scenes.

Experience

Research Intern — Aug. 20232 – Jan. 2023
Genomics and Health Informatics Group - Idiap — *Martigny, Switzerland*

- Applied Convolutional Neural Networks (CNNs) to imaging data for studying cellular morphology in neurodegenerative diseases.
- Evaluated AI explainability techniques for CNNs in the context of bioimaging.

Research Intern — Aug. 2019 – Feb. 2020
R&D Team - Swiss National Ski Federation — *Bern, Switzerland*

- Investigated the use of GNSS technology for performance analysis in winter sports.
- Conducted an empirical study on starting strategies in alpine skiing.

Teaching Assistant — Feb 2020 – July. 2020
Distributed Object Programming Lab - UNIL — *Lausanne, Switzerland*

- Detected similarities between GNSS trajectories in large datasets using a novel trajectory indexing technique (Geodabs)

Ski Trainer Jul. 2017 – Sept. 2017
Stockman Sport *New Zealand*

- Trained athletes part of the Stockman Sport team in New Zealand.

Alpine Ski Racer 2003 – 2015
Swiss National Ski Federation *Brig, Switzerland*

- Competed and trained internationally in alpine skiing for over a decade.

Volunteering

President of the Organizing Committee September 2021 – April 2024
FIS European Cup *Jaun, Switzerland*

- Managed and coordinated an international alpine skiing competition
- Organized a two-day event with around 200 volunteers, 100 athletes, and 3,000 spectators

Skills

Programming Language	Python, Matlab, C++, Julia
Language	French: native, English: advanced, German: advanced
Field of expertise	Data Science, Computational Neuroscience, Machine learning, Biology, Applied software engineering
Interset:	Outdoor sport (climbing, hiking, surfing)

Relevant Coursework

Computer Science:	Machine Learning, Modern Natural Language Processing
Statistics:	Applied Probability & Stochastic Processes
Signal Processing:	Neural Signals Processing, Image Analysis and Pattern Recognition
Neuroscience:	Brain-like Computation and Intelligence, Neuronal Dynamics