

# FLAVIO MARTINELLI

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## EDUCATION

last updated December 14, 2025

2021-2026	<b>EPFL</b> , Ph.D. in Computational Neuroscience, Lausanne (CH) <i>Advisors: Prof. Wulfram Gerstner &amp; Ph.D. Johanni Brea</i>
2025	<b>Harvard</b> , Visiting Doctoral Student, Boston (US) <i>Advisor: Prof. Kanaka Rajan</i>
2020	<b>EPFL</b> , M.Sc. in Life Sciences and Technologies, Lausanne (CH) <span style="float: right;">GPA: 5.55/6.00</span>
2017	<b>Politecnico di Milano</b> , B.Eng. in Biomedical Engineering, Milano (IT) <span style="float: right;">GPA: 109/110</span>
2014	<b>IIS B.Castelli</b> , Electronics Highschool, Brescia (IT)

## WORK EXPERIENCE

2020	<b>LREN</b> , Research Assistant at university hospital (CHUV), Lausanne (CH) <i>Reinforcement learning modelling of fMRI data</i>
2019	<b>Logitech</b> , R&D Intern, Lausanne (CH) <i>Neuromorphic computing for speech detection</i>

## SELECTED PUBLICATIONS

2025	<b>NeurIPS 2025</b> : “ <i>Flat Channels to Infinity in Neural Loss Landscapes</i> ” Martinelli, F.*, Van Meegen A.*., Şimşek B., Gerstner W. & Brea J.
2025	<b>Nature Machine Intelligence</b> : “ <i>Actor-Critic Networks with Analogue Memristors Mimicking Reward-Based Learning</i> ” Portner K.*., Zellweger T.*., Martinelli, F., ..., Offrein B., Gerstner W., Luisier M. & Emboras A.
2024	<b>ICML 2024</b> : “ <i>Expand-and-Cluster: Parameter Recovery of Neural Networks</i> ” Martinelli, F., Şimşek B., Gerstner W.* & Brea J.*
2020	<b>ICAASP 2020</b> : “ <i>Spiking neural networks trained with backpropagation for low power neuromorphic implementation of voice activity detection</i> ” Martinelli, F., Dellaferreira G., Mainar P. & Cernak M.

\* equal contribution

## HONORS AND AWARDS

2023	<b>Best Presentation Award</b> , NeuroLeman Annual Meeting, Villars (CH)
2020	<b>Mention of Excellence</b> for final GPA, EPFL, Lausanne (CH)
2014-2017	<b>High Merits</b> tuition exemptions, Politecnico di Milano (IT)
2013	<b>First Place at National Electronics Competition</b> , Bergamo (IT)

## SKILLS

CODING	Python, Julia, MATLAB, C/C++
TOOLS	PyTorch, Git, Shell, Kubernetes
SOFT	Teaching, Project design, Supervision

## LANGUAGES

ITALIAN	Native
ENGLISH	Professional
FRENCH	Intermediate

## INVITED TALKS

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- 2025     “*Flat Channels to Infinity in Neural Loss Landscapes*”  
            **EPFL, Lausanne (CH)**, ELLIS pre-NeurIPS event  
“*Flat Channels to Infinity in Neural Loss Landscapes*”  
            **Online**, Ploutos platform  
“*Reverse Engineering Neural Circuits: Insights from Loss Landscape Geometry*”  
            **Harvard University, Boston (USA)**, Kanaka Rajan’s group
- 2024     “*Expand-and-Cluster: Parameter Recovery of Neural Networks*”  
            **Graz University of Technology, Graz (AT)**, EfficientML reading group  
“*From Loss Landscape Geometry to Weight Recovery in Neural Networks*”  
            **Institute of Science and Technology, Vienna (AT)**, Tim Vogels’s group  
“*Expand-and-Cluster: Parameter Recovery of Neural Networks*”  
            **Max Planck Institute for Intelligent Systems, Tübingen (DE)**, Jakob Macke’s group  
“*Expand-and-Cluster: Parameter Recovery of Neural Networks*”  
            **Crans-Montana (CH)**, Swiss Computational Neuroscience Retreat 2024
- 2023     “*Expand-and-Cluster: Parameter Recovery of Neural Networks*”  
            **Villars (CH)**, Annual Meeting of the NeuroLeman Network 2023  
“*Expand-and-Cluster: Parameter Recovery of Neural Networks*”  
            **ETH, Zurich (CH)**, Angelika Steger and Joao Sacramento’s groups

## COURSES AND WORKSHOPS

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- 2025     **MIT Brains, Minds and Machines** summer course, Woods Hole, MA (USA)

## CONFERENCE ACTIVITIES

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- 2025     **UniREPS**: poster, San Diego (USA)  
            **NeurIPS**: poster, San Diego (USA)  
            **Bernstein Conference**: poster, Frankfurt (DE)  
            **Frontiers in NeuroAI**: poster, Boston (USA)  
            **Spring into Science (Harvard Kempner Institute)**: poster, Boston (USA)
- 2024     **ICML**: poster, Vienna (AT)  
            **Youth in High-Dimensions**: poster, Trieste (IT)
- 2023     **NeuroLeman Meeting**: talk and poster, Villars (CH)  
            **Bernstein Conference**: poster, Berlin (DE)
- 2022     **Bernstein Conference**: poster, Berlin (DE)

## TEACHING EXPERIENCE (TA)

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- 2023     **Computational Neuroscience: Neuronal Dynamics**, EPFL master course  
2022     **Biological Modelling of Neural Networks**, EPFL master course  
2021-2023   **Introduction to Machine Learning for Bioengineers**, EPFL bachelor course  
2021-       **Supervised 5 Master Students**:  
                *R. Palazzo, A. Salvatore, A. Beiser, M. Brodeur, R. Jabyiev*

## CONTRIBUTED PUBLICATIONS

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- 2025      **NeurIPS 2025 (spotlight):** “*Measuring and Controlling Solution Degeneracy across Task-Trained Recurrent Neural Networks*”  
Huang A., Singh S.H., Martinelli, F. & Rajan K.  
**NeurIPS UniReps workshop:** “*Data Augmentation Techniques to Reverse-Engineer Neural Network Weights from Input-Output Queries*”  
Beiser A., Martinelli, F., Gerstner W. & Brea J.
- 2023      **ArXiv:** “*MLPGradientFlow: going with the flow of multilayer perceptrons (and finding minima fast and accurately)*”  
Brea J., Martinelli, F., Şimşek B. & Gerstner W.
- 2020      **ICAASP 2020:** “*A Bin Encoding Training of a Spiking Neural Network Based Voice Activity Detection*”  
Dellaferreira G., Martinelli, F. & Cernak M.