FLAVIO MARTINELLI

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EDUCATION

last updated August 5, 2025

2021-2026	**Ph.D. in Computational Neuroscience**, EPFL, Lausanne (CH) *Advisors: Prof. Wulfram Gerstner & Ph.D. Johanni Brea*	
2025	**Visiting Doctoral Student**, Harvard University, Boston (US) *Advisor: Prof. Kanaka Rajan*	
2020	**M.Sc. in Neuroengineering**, EPFL, Lausanne (CH)	GPA: 5.55/6.00
2017	**B.Eng. in Biomedical Engineering**, Politecnico di Milano (IT)	GPA: 109/110
2014	**Electronics Highschool**, IIS B.Castelli, Brescia (IT)	

WORK EXPERIENCE

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

SELECTED PUBLICATIONS

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

** equal contribution*

HONORS AND AWARDS

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

2025 *"Reverse Engineering Neural Circuits: Insights from Loss Landscape Geometry"*
Kanaka Rajan's group, Harvard University, Boston (USA)

2024 *"Expand-and-Cluster: Parameter Recovery of Neural Networks"*
EfficientML reading group, Graz University of Technology, Graz (AT)
"From Loss Landscape Geometry to Weight Recovery in Neural Networks"
Tim Vogels's group, Institute of Science and Technology, Vienna (AT)
"Expand-and-Cluster: Parameter Recovery of Neural Networks"
Jakob Macke's group, Max Planck Institute for Intelligent Systems, Tübingen (DE)
"Expand-and-Cluster: Parameter Recovery of Neural Networks"
Swiss Computational Neuroscience Retreat 2024, Crans-Montana (CH)

2023 *"Expand-and-Cluster: Parameter Recovery of Neural Networks"*
Annual Meeting of the NeuroLeman Network 2023, Villars (CH)
"Expand-and-Cluster: Parameter Recovery of Neural Networks"
Angelika Steger and Joao Sacramento's groups, ETH, Zurich (CH)

COURSES AND WORKSHOPS

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

CONFERENCE ACTIVITIES

2025 **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)

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

2024 Measuring and Controlling Solution Degeneracy across Task-Trained Recurrent Neural Networks, **ArXiv**
Huang A., Singh S.H., ***Martinelli, F.*** *& Rajan K.*

2023 MLPGradientFlow: going with the flow of multilayer perceptrons (and finding minima fast and accurately), **ArXiv**
Brea J., ***Martinelli, F.****, Şimşek B. & Gerstner W.*

2020 A Bin Encoding Training of a Spiking Neural Network Based Voice Activity Detection, **ICAASP 2020**
Dellaferrera G., ***Martinelli, F.*** *& Cernak M.*