Lorenzo Veronese

Curriculum Vitae

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Profile

PhD Candidate at Politecnico di Milano, specializing in Computational Cognitive Neuroscience and Neuro-inspired AI. My research focuses on developing state-of-the-art AI models, grounded in fMRI data, to emulate complex human functions like planning (through theory-driven AI models grounded in neuroscience, psychology, and neuropsychology) and visual perception (via advanced two-stage generative decoding architectures). Published work includes enhancements to neural decoding pipelines, demonstrating superior performance and efficiency (almost 100%) for real-time applications.

Education

2024–Present **Ph.D., Bioengineering**, *Politecnico di Milano (Milan, Italy)*, Supervisor: Prof. Pietro Cerveri, Computational Cognitive Neuroscience for Understanding Human Planning and Perception.

2022–2024 **M.Sc., Computer Science Engineering, Artificial Intelligence**, *Politecnico di Milano (Milan, Italy)*, Thesis: "Visual stimulus reconstruction from BOLD fMRI signal using generative AI", Final grade: 110 *cum laude*/110 (GPA: 29.2).

2019–2022 **B.Sc., Computer Science Engineering**, *Politecnico di Milano (Milan, Italy).*

Research Experience

2024–Present **Research fellow and PhD student**, *Politecnico di Milano (Department of Electronics, Information and Bioengineering) and IRCCS Ospedale San Raffaele (Department of Neuroradiology).*

- Development of a visual neural decoding image generation AI model able to reconstruct human visual perception from fMRI brain activity in collaboration with IRCCS Ospedale San Raffaele.
- Development of a theory-driven computational model of human planning.

2021–2023 **Student Researcher**, *Politecnico di Milano (Department of Electronics, Information and Bioengineering), NECSTLab.*

- Development of a generative deep learning model for data harmonization of histopathological images across different imaging domains.

2022–2023 **Student Researcher**, *Politecnico di Milano (Department of Electronics, Information and Bioengineering), DEEP-SE Lab.*

- Development of a formal model of psychotherapy conversations through a Stochastic Hybrid Automata system.

2021–2022 **Student Researcher**, *Politecnico di Milano (Department of Electronics, Information and Bioengineering), AIRLab.*

- Design and development of a robotic tool to assist people with disabilities in writing.
- Team leader.

Peer-reviewed Scientific Publications

Veronese, L., Pecco, N., Moglia, A., Scifo, P., Castellano, A., Mainardi, L., Della Rosa, P.A., & Cerveri, P. (2025). Evaluating Semantic Brain Regions Contribution to Visual Neural Decoding Performance on Different Classes of Stimuli *20th conference on Computational Intelligence methods for Bioinformatics and Biostatistics (CIBB 2025)*.

Veronese, L., Moglia, A., Pecco, N., Della Rosa, P.A., Scifo, P., Mainardi, L., & Cerveri, P. (2025). Optimized AI-based neural decoding from BOLD fMRI signal for analyzing visual and semantic ROIs in the human visual system. *Journal of Neural Engineering*, 22(4).

Veronese, L., Poles, I., D'Arnese, E., Santambrogio, M.D. (2023). Stain Transfer using CycleGAN for Histopathological Images. *IEEE EUROCON 2023-20th International Conference on Smart Technologies*.

Teaching

2025 **Teaching Assistant, Neuroengineering**, *Politecnico di Milano*

2025 **Teaching Assistant, Fundamentals of Computer Science**, *Politecnico di Milano*

Awards & Honors

2025 Selected by Nova talent (ID: 6698IITXRXG57SY19CHV5KD3E) — Nova

2022 Scholarship for academic merit — Town of Cucciago & Rubelli

Skills

Expertise	Artificial Intelligence, Machine Learning, Deep Learning, fMRI, Cognitive Neuroscience, Public Speaking
Programming	Python, PyTorch, TensorFlow, MATLAB, Bash
Tools	Git, LaTeX, Statistical Parametric Matching (SPM), FSL
Languages	English (fluent), Italian (native)

References

Prof. Pietro Cerveri	Full Professor — Università di Pavia pietro.cerveri@unipv.it
Dr. Pasquale Anthony Della Rosa	Scientific Collaborator — IRCCS Ospedale San Raffaele dellarosa.pasquale@hsr.it

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