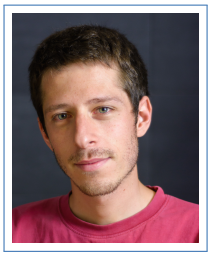

Pietro Vertechi

Curriculum Vitae

Education

2017 **Theoretical and practical course on animal handling (rodents)**, *Champalimaud Center for the Unknown*, Lisbon.

2015–present **International Neuroscience Doctoral Programme**, Mainen Lab, *Champalimaud Center for the Unknown*, Lisbon, Study the behavioral role of the central neuromodulator serotoin using optogenetical and chemogenetical approaches in rodents.

2013–2014 **Internship**, Machens Lab, *Champalimaud Center for the Unknown*, Lisbon, Research project on biologically plausible learning rules in recurrent neural networks, with a focus on population coding and short-term memory.

2012–2013 **Second year of Master in Fundamental Mathematics (M2)**, *Ecole Normale Supérieure - UPMC*, Paris, Average Grade M2: 19.4/20, Mention Très Bien.

2011–2012 **Last year of undergraduate studies (L3) and first year of graduate studies (M1) in Fundamental Mathematics**, *Ecole Normale Supérieure*, Paris.

2011 **Awarded the Ecole Normale Supérieure International Selection Scholarship**, Paris.

2009–2011 **Undergraduate studies in Mathematics**, *Scuola Normale Superiore*, Pisa.

Master's Thesis

Title An ∞-categorical approach to weak algebraic structures, with applications in derived algebraic geometry.

Supervisor Professor Gabriele Vezzosi

Description In this work I applied the novel mathematical machinery of higher category theory to recover and generalise classical results in algebraic geometry and algebraic topology.

Publications

In preparation **Wieland Brendel*, Ralph Bourdokan*, Pietro Vertechi*, Christian K. Machens, Sophie Denève**, *Derivation of spike-timing-dependent plasticity by maximizing representational efficiency*.

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2014 **Pietro Vertechi, Wieland Brendel, Christian K. Machens (2014)**, *Unsupervised learning of an efficient short-term memory network*, Advances in Neural Information Processing Systems, pp. 3653-3661.

Participation in conferences

Neuroscience and Machine Learning

March 2018, Salt Lake City **Computational and Systems Neuroscience (Cosyne)**, *Talk*.

Nov. 2016, San Diego **Society for Neuroscience (SFN)**, *Poster*.

March 2016, Salt Lake City **Computational and Systems Neuroscience (Cosyne)**, *Poster*.

Dec. 2014, Montreal **Neural Information Processing Systems (NIPS)**, *Spotlight poster*.

March 2014, Salt Lake City **Computational and Systems Neuroscience (Cosyne)**, *Poster*.

Mathematics

March-June 2013, Paris **Cycle of seminars on Derived Algebraic Geometry**, *Talk*.

Languages

Italian **Mothertongue**

French **Fluent**

English **Fluent** *CPE 2009*

Portuguese **Fluent**

Additional skills

Programming languages: Experience with Julia, Python, Matlab and LaTeX

Package development: Developed GroupedErrors and PlugAndPlot packages for population data analysis and visualization. Contributed to StatPlots and Survival packages for statistical visualizations and survival analysis respectively.

Awards

2007 1st place in the Italian Mathematical Olympiad and 4th place ex aequo in the International Mathematical Olympiad (IMO 2007).

Other activities

2006–2007 **Fair Trade Volunteer**, *Ass. La Vita Nova*, Rome.