

Davide Spalla

Data scientist with a background in theoretical physics and a PhD in neuroscience. Currently a researcher in computational neuroscience, applying machine learning to neural recordings.

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EXPERIENCE

Radboud University, Nijmegen — *Postdoctoral Researcher*

JANUARY 2021 - PRESENT

Researcher in the Neuronal Network of Memory Lab, working on machine learning methods for the analysis of neural recordings and computational models of memory and learning.

SISSA, Trieste — *PhD student*

NOVEMBER 2016 - NOVEMBER 2020

PhD student in neuroscience, working on neural network theory, memory and learning models and the neural mechanism of spatial cognition.

Center for Quantum Technologies, Singapore — *Research assistant*

SEPTEMBER 2015 - DECEMBER 2015

Working on the implementation of efficient algorithms for the approximate solution of NP-hard problems in quantum many body systems.

ISI, Torino — *Research assistant*

APRIL 2014 - OCTOBER 2014

Working on the development and application of topological data analysis algorithms to genomic data.

EDUCATION

SISSA, Trieste — *PhD in Cognitive Neuroscience*

NOVEMBER 2016 - NOVEMBER 2020

Graduated cum laude with thesis: "Space, time and memory in the medial temporal lobe"

Università degli Studi, Torino — *MSc in Physics of Complex Systems*

OCTOBER 2014 - OCTOBER 2016

Graduated cum laude with thesis: "Gene regulation in functional brain networks"

PROGRAMMING SKILLS

Python (ScikitLearn, Pandas, Tensorflow, Jupyter)

Matlab

R

SQL (BigQuery)

Bash, Linux OS, Git

GENERAL SKILLS / EXPERTISE

Data analysis and visualization

Machine learning

Neural networks

Probability and statistics

Deep learning

NLP

LANGUAGES

English (Proficient)

Italian (Native)

Dutch (Basic)

TEACHING & MENTORING EXPERIENCE

Radboud University — Course instructor

2021 - Instructor for the module “Unsupervised Learning - dimensionality reduction and clustering techniques” at Radboud University.

SISSA — Thesis co-supervisor

2020 - Thesis co-supervisor of Isabel Maria Cornacchia for the M.Sc program in Physics of Complex systems .

SISSA — Thesis co-supervisor

2019 - Thesis co-supervisor of Lenonardo Battistelli for the B.Sc program in Physics.

PROFESSIONAL TRAINING

Winter School in Quantitative Systems Biology: Learning and Artificial Intelligence
ICTP, Trieste, 2018

FENS Winter School in Neural Control of Behaviour
Obergurgl, 2017

PUBLICATIONS & PREPRINTS

Continuous attractors for dynamic memories

Spalla D., Cornacchia I.M. & Treves, A. (2021).
BioRxiv, **doi:** <https://doi.org/10.1101/2020.11.08.373084>
Recently accepted for publication in eLife

Angular and linear speed cells in the parahippocampal circuits

Spalla D., Treves A. & Boccara C. (2021).
BioRxiv, doi: <https://doi.org/10.1101/2021.01.28.428631>

Can grid cells ensemble represent multiple spaces?

Spalla D., Dubreuil A., Rosay S., Monasson, R. & Treves, A. (2019).
Neural Computation, doi: https://doi.org/10.1162/neco_a_01237