Paolo Agliati, 26

Donders Institute for Brain, Cognition and Behaviour

Lives in Arnhem | From Milan

paolo.agliati@donders.ru.nl

" I am deeply curious about the natural aspects of computation and intelligence. My research concerns the development of bio-plausible (spiking) neural network models"

Key Concepts

- Dimensionality Reduction
- Spiking Neural Networks
- Dynamical Systems
- Geometric Interpretation of RNNs
- Optimal Control Theory
- Bio-plausible Modeling

Past Studies

Universiteit van Amsterdam (2021 - 2023)
MSc - Research Master Brain and Cognitive Sciences

Milano Bicocca University (2017 - 2021)
BSc - Biotechnologies

Scientific High School (2011 - 2016)
Liceo Galileo Galilei - Applied Sciences Track

Current Job — *2023 - ongoing*

PhD Candidate - Donders Center for Cognition
Radboud University, Nijmegen

Artificial Cognitive Systems Group - Investigating controlled dynamic behavior in SNNs through the use of lower-dimensional manifolds of network activity

Work Experience

2023

Research Internship - Donders Center for Cognition
Radboud University, Nijmegen

Collaboration with the Max Planck Institute to explore the biophysical bases of working memory using spiking neural networks (Python, PyTorch, NEST)

2022

Research Internship - "IMCN"
UvA, Amsterdam

Developing hierarchical Bayesian models in a reinforcement learning framework to study value-based decision making in humans (R)

2021

Growth advisor - MUSR

Optimising user acquisition and retention for MUSR, an app that matches users based on their Spotify listening habits. Around 600 monthly active users in the beta test phase

2020

Research Internship - "Rita Levi Montalcini"
Milano-Bicocca Univesity, Milan

Studying the mechanisms of neurodegeneration in Parkinson's Disease

Academic Experience

- **Poster Presentation Accepted**
  5th International Convention on the Mathematics of Neuroscience and AI, Rome

  Spiking Neural Networks as optimal greedy controllers
- **Oxford machine learning summer school**
  Organizers: AI for Global Goals, the University of Oxford's Deep Medicine program & CIFAR
- **Literature Thesis**
  Brain-inspired memory implmentation in reinforcement learning
- **Project - Neural Dynamics and Deep Learning**
  Investigations in working memory using a large-scale model of the macaque neocortex
- **UvA Summer School**
  Computation in consciousness and Perception - Predictive Coding for Binocular Rivalry
- **Visit at the Max Planck Institute**
  Liepzig
- **Amsterdam Neuroscience Annual Meeting**
  Essay on poster: Enhancement of contextual fear memory by interference with astrocyte-synapse structural plasticity
- **Literature Thesis**
  Development of a 3D model for sporadic Parkinson's disease G2019S-LRRK2 using midbrain organoids

Skills

- Office 365 Package
- Linux Environment
- LaTeX
- GitHub / GitLab
- RStudio
- Python, Pytorch

Languages

- Italian (Native)
- English (C2)
- Portuguese (project)

Favourite Books

- Chance And Necessity - Jacques Monod
- The Book of Disquiet - Fernando Pessoa
- Bestiary - Julio Cortázar

Hobbies

- Experimental Music
- Poetry and short stories
- Brazilian Dancing (Forró)