Matteo **Pinna**

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EDUCATION

University of Pisa
09/2021 - 10/2024

Master in Computer Science

- Grade: 110 with honours/110 · GPA: 29.33/30.00.
- Thesis: "*Deep Residual Echo State Networks, exploring residual orthogonal connections in untrained Recurrent Neural Networks*".

Technical University of Munich
10/2022 - 07/2023

Visiting Student

- Awardee of Erasmus scholarship ($\sim 10\%$ of students selected) for an exchange year abroad in higher education.

University of Pisa
09/2017 - 06/2021

Bachelor in Computer Science

- Grade: 95/110.
- Thesis: "*Case study of Yup, the social dApp of the Ethereum blockchain*".

RESEARCH EXPERIENCE

University of Pisa
01/2025 - 01/2026

Research Fellow · Computational Intelligence & Machine Learning (CIML) Group

- Research on efficient deep learning and reservoir computing, supervised by Prof. Claudio Gallicchio.
- Focus on reservoir computing neural networks for learning long-term temporal dependencies and parallel information processing.
- Produced ×1 paper, ×1 poster, and ×3 manuscripts (under review).

University of Pisa
01/2024 - 10/2024

Graduate Student Researcher · Computational Intelligence & Machine Learning (CIML) Group

- Research on reservoir computing and echo state networks, supervised by Prof. Claudio Gallicchio and Prof. Andrea Ceni.
- Focus on hierarchical echo state networks based on orthogonal residual connections, with the objective of enhancing long-term temporal modeling in randomized recurrent neural networks.

University of Pisa
01/2021 - 06/2021

Undergraduate Student Researcher · Distributed Ledger Laboratory (DLT) Group

- Research on blockchain-based social networks, supervised by Prof. Barbara Guidi and Prof. Andrea Michienzi.
- Analyzed social and economic transactions within the smart contract of Yup, a social network hosted on the Ethereum blockchain.

OPEN SOURCE EXPERIENCE

European Summer of Code
07/2025 - 10/2025

Open Source Machine Learning Developer · German Center for Open Source AI (GC.OS)

- Focus on open-source AI for drug discovery and in-silico aptamer design, supervised by Dr. Franz Király (GC.OS, sktime, prev. UCL).
- Translated machine learning and deep learning techniques from literature to production-ready code.
- Implemented data processing pipelines and feature extraction techniques for protein/compound data.

PUBLICATIONS

* denotes equal contributions among authors.

Conference proceedings

[1] **M. Pinna**, A. Ceni, C. Gallicchio, "*Residual Reservoir Memory Networks*", to appear in International Joint Conference on Neural Networks, 2025 **(Oral)**.

Under review

[2] **M. Pinna**, A. Ceni, C. Gallicchio, "*Deep Residual Echo State Networks, exploring residual orthogonal connections in untrained Recurrent Neural Networks*", submitted to IEEE Transactions on Neural Networks and Learning Systems.

[3] G. Lagomarsini*, **M. Pinna***, A. Ceni, C. Gallicchio, "*ESNv2: Resurrecting Reservoir Computing in the Deep Learning era*", submitted to International Conference on Learning Representations, 2026.

[4] **M. Pinna**, A. Ceni, C. Gallicchio, "*Randomized Residual Convolutional Neural Networks*", submitted to Computers and Electrical Engineering.

PRESENTATIONS & POSTERS

2025 **"*Residual Reservoir Memory Networks*",** ECML PKDD - Workshop on Deep Learning meets Neuromorphic Hardware.

HONOURS & AWARDS

2025 **Best Poster** · **ECML PKDD - Workshop on Deep Learning meets Neuromorphic Hardware**
Top 1 out of 11 accepted papers, awarded for the paper *"Residual Reservoir Memory Networks"*.

2025 **Research Fellowship** · **University of Pisa, NEURONE**
Research funding worth €20.000 to work on *"Deep Reservoir Computing models based on orthogonal residual connections"*.

2022 **Erasmus Scholarship** · **University of Pisa**
Scholarship worth €8.000 for an exchange year abroad at the Technical University of Munich (Germany).

REVIEWING

2025 **ECML PKDD - Workshop on Deep Learning meets Neuromorphic Hardware** · **IJCNN**

OPEN SOURCE MAINTAINER

pyaptamer · github.com/gc-os-ai/pyaptamer
- Python library for easy drug discovery and in-silico aptamer design with artificial intelligence, with sklearn-compatible API.
- Lead implementation and refactoring of AI techniques from the literature, review contributors' PRs, and write documentation.

REFERENCES

Prof. Claudio Gallicchio · claudio.gallicchio@unipi.it
- Associate Professor of Computer Science at the University of Pisa.

Prof. Andrea Ceni · andrea.ceni@unipi.it
- Assistant Professor of Computer Science at the University of Pisa.

Dr. Franz Király · fkiraly@gcos.ai
- Director at German Center for Open Source AI and European Summer of Code, previously Lecturer of Statistics at UCL (UK)