

# Alessandro Pierro / Ph.D. Student

Based in Munich, Germany /  [Scholar](#) /  [GitHub](#) /  [LinkedIn](#)

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I am a first-year Ph.D. student working on hardware-aware machine learning and optimization, with a focus on neuromorphic and compute-memory integrated platforms.

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## Education

### Doctorate in Computer Science / Ludwig-Maximilians-Universität München

OCT 2023 - PRESENT, MUNICH (GERMANY)

Expected graduation date: beginning of 2027

Research on hardware acceleration of machine learning and optimization algorithms at the edge, applying the methodology to the Intel Loihi 2 chip. The project is funded by Intel Labs and supervised by [Prof. Eyke Hüllermeier](#).

### M.Sc. in Data Science and Science (cum laude) / University of Trieste, SISSA, and ICTP

OCT 2021 - SEP 2023, TRIESTE (ITALY)

Thesis on hardware-accelerated simulated annealing, funded by Intel Labs and supervised by [Prof. Lorenzo Castelli](#).

Courses in algorithm design, parallel programming and HPC, machine learning, probabilistic modeling, deep learning, kernel methods, data visualization, mathematical optimization, and information retrieval.

### B.Sc. in Mathematics (cum laude) / University of Modena and Reggio Emilia

SEP 2018 - JUL 2021, MODENA (ITALY)

Thesis on direct collocation methods for trajectory optimization, supervised by [Prof. Marco Prato](#).

Courses in real analysis, linear algebra and geometry, numerical analysis and optimization, probability and statistics, data structures and algorithms, measure theory, and mathematical physics.

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## Professional Experience

### Intel Labs / Algorithms Researcher

OCT 2022 - PRESENT, MUNICH (GERMANY)

Part of the core Lava development team, the Intel open-source neuromorphic computing library, designing and implementing algorithms with [Python](#), [C](#) and [Assembly](#) for the Intel Loihi 2 neuromorphic chip.

### Oslo Metropolitan University / Research Assistant

AUG 2022 - OCT 2022, OSLO (NORWAY)

Developed an [evolutionary algorithm](#) to characterize and optimize a hydrodynamical computational reservoir, which improved its separation capabilities for supervised learning tasks by 100x. Work presented at GECCO 2023.

### University of Trieste / Research Intern

JAN 2022 - JUN 2022, TRIESTE (ITALY)

Combined [evolutionary algorithms](#) and [reinforcement learning](#) to teach locomotion to modular soft robots directly from perception data. I implemented the algorithms in [Java](#) and used the 2dhmsr simulator for the experiments.

### Modena Racing Driverless / Localization and Planning Developer

OCT 2019 - JUL 2021, MODENA (ITALY)

Won the "Autonomous Design" prize at IMechE Formula SAE (Silverstone, 2021), an international competition in vehicle engineering, where I collaborated in developing a [Model Predictive Controller](#) using [C++](#) and [ROS2](#).

## Publications

- Yik, Jason, [et al.](#) "Neurobench: Advancing neuromorphic computing through collaborative, fair and representative benchmarking." *Under review*.
  - [Pierro, Alessandro](#), et al. "Optimization of a hydrodynamic computational reservoir through evolution." *Proceedings of the Genetic and Evolutionary Computation Conference*. 2023.
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## Invited Talks

- Neuromorphic acceleration for combinatorial optimization  
*University of Trieste, course of Operations Research (Apr 2024, Trieste IT)*
  - Hands-on neuromorphic computing with Lava and Intel Loihi 2  
*3rd AutoML Fall School (Nov 2023, Munich DE)*
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## Academic Service and Contributions

- Reviewer for the *Journal of Open Source Software (JOSS)* since 2024.
  - Maintainer of SHAP-IQ, an open-source Python library for explainable AI.
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## Awards & Scholarships

### M.Sc. Scholarship / Collegio Universitario Luciano Fonda

OCT 2021 - SEP 2023, TRIESTE (ITALY)

Two-year scholarship assigned to 5 outstanding students of the Dept. of Mathematics and Geoscience ( $\approx$  top 2%), offering training opportunities (technical and soft skills), accommodation, and support for international mobility.

### Study Award / University of Modena and Reggio Emilia

2018 & 2019, MODENA (ITALY)

Annual prize awarded to the top 5% of undergraduate students with the highest GPA in the university.

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## Languages

Italian (native), English (fluent), and Spanish (beginner).