Giorgio **Carbone**

Milan (MI), Italy
Born in Como on May 13, 1997
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Profile

I am a passionate data scientist, deep learning specialist and computational chemist with a mission to bring together AI and science for groundbreaking advancements.

Currently, I am pursuing a PhD at the University of Milano-Bicocca, specializing in Generative Artificial Intelligence for Drug Design within the Computational Chemistry Lab, part of the PhD program in Chemical, Geological, and Environmental Sciences.

I graduated with a Master's Degree in Data Science from the University of Milano-Bicocca, where I received comprehensive training in all major fields of data science and developed a strong interest in machine learning and programming. My background in Chemistry, with a Bachelor's Degree, has equipped me with strong analytical, mathematical, and statistical skills, as well as a deep love for discovery and science, particularly in the fields of physical chemistry, computational chemistry, and drug discovery.

I consider myself a kind, empathetic, creative, and determined individual. I am pragmatic and organized, yet flexible, always ready to adapt to new challenges.

While I maintain a broad interest in data science, my passion is rooted in deep learning and generative models. Currently, I am focused on applying these models in scientific contexts, with a particular emphasis on drug discovery.

Experience

University of Milano-Bicocca & ITALFARMACO S.P.A
Milan (MI), Italy

PhD Student in Generative AI for Drug Design - Full time
Nov. 2024 – Today

Python, Drug Discovery, Deep Learning, Computational Chemistry, Artificial Intelligence

- PhD Student specializing in the development of Generative Artificial Intelligence and Deep Discriminative Learning models for Drug Design, aimed at discovering novel and selective ligands.
- Enrolled in the PhD Program in Chemical, Geological, and Environmental Sciences (Chemical Sciences Curriculum) at the University of Milano-Bicocca. The scholarship is fully funded by ITALFARMACO S.p.A. as part of the project "Structure-based De Novo Drug Design Using Deep 3D Generative Models for the Discovery of Novel and Selective Ligands".
- Research activities are conducted at the Computational Chemistry Lab of Unimib and the Computational Chemistry Lab within the New Drug Incubator (NDI) department at ITALFARMACO S.p.A.

ITALFARMACO S.P.A – New Drug Incubator (NDI)
Cinisello Balsamo (MI), Italy

Research Internship - New Drug Incubator (NDI) - Full time
May 2024 – Oct. 2024

Python, Drug Discovery, Deep Learning, Computational Chemistry, Artificial Intelligence

- The internship project focused on the application of Artificial Intelligence (AI) for the generation of new potential enzyme inhibitors.

University of Milano-Bicocca - Imaging and Vision Laboratory (IVL)
Milan (MI), Italy

Research Internship - Imaging and Vision Laboratory (IVL) - Full time - GitHub
Feb. 2023 – July 2023

Python, PyTorch, Deep Learning, Transformers, Transfer Learning, Neural Encoding Models, Visual Neuroscience

- I developed an encoding model of the human visual cortex that enables accurate prediction of local neural BOLD fMRI responses to visual stimuli consisting of complex natural scenes, adopting a two-stage voxel-wise modelling approach based on stimuli visual features extraction (using goal-driven Deep Neural Networks) and their linear mapping to brain responses.

University of Milano-Bicocca – Computational Physical Chemistry Laboratory Milan (MI), Italy

Research Internship - Computational Physical Chemistry Laboratory - Full time - GitHub Oct. 2019 – Jan. 2020

Python, Grand Canonical Monte Carlo Simulations, Machine Learning, Clustering, scikit-learn

- My internship activity was part of a research project concerning the molecular-level understanding, by means of computational Monte Carlo simulations, of the adsorption process of water on model surfaces of atmospheric particulate matter.
- I developed a solution capable of performing automatic frame-by-frame data analysis of the generated during each simulation, leveraging unsupervised machine learning (DBSCAN) for water clusters detection, revealing how the structure of the adsorbed water molecules changes depending on water pressure, and how their orientation varies with the distance from the surface.

Education

University of Milano-Bicocca Milan (MI), Italy

PHD STUDENT Nov. 2024 – Today

- Enrolled in the PhD Program in Chemical, Geological, and Environmental Sciences (Chemical Sciences Curriculum) at the University of Milano-Bicocca.
- The scholarship is fully funded by ITALFARMACO S.p.A. as part of the project "Structure-based De Novo Drug Design Using Deep 3D Generative Models for the Discovery of Novel and Selective Ligands".

University of Milano-Bicocca Milan (MI), Italy

MASTER'S DEGREE IN DATA SCIENCE (LM91) Sept. 2021 – March 2024

- Graduation grade: 110/110 cum laude
- Partly delivered in English
- GPA: 29.7/30

University of Milano-Bicocca Milan (MI), Italy

BACHELOR'S DEGREE OF CHEMICAL SCIENCES AND TECHNOLOGIES (L-27) Sept. 2016 – Oct. 2020

- Graduation grade: 110/110 cum laude
- Certification: *Chemistry Eurobachelor®*

Istituto Superiore G. Terragni Olgiate Comasco (CO), Italy

SCIENTIFIC HIGH SCHOOL WITH APPLIED SCIENCE OPTION Sept. 2011 – July 2016

- Final grade: 91/100

Publications

Rizza F, Rovaletti A, **Carbone G**, Miyake T, Greco C, Cosentino U. ***Theoretical Investigation of Inorganic Particulate Matter: The Case of Water Adsorption on a NaCl Particle Model Studied Using Grand Canonical Monte Carlo Simulations***. Poster presented at: XXVIII National Congress of Società Chimica Italiana (***SCI2024***). August, 28 2024. Milan (IT).

Rizza F, Rovaletti A, **Carbone G**, Miyake T, Greco C, Cosentino U. ***Theoretical Investigation of Inorganic Particulate Matter: The Case of Water Adsorption on a NaCl Particle Model Studied Using Grand Canonical Monte Carlo Simulations***. ***Inorganics***. 2023; 11(11):421. https://doi.org/10.3390/inorganics11110421

- My work focused on the investigation, formal analysis (cluster analysis and orientational analysis) and data curation phases, specifically studying the aggregative phenomena that characterize the process of water adsorption on NaCl atmospheric particulate matter.

Awards

Premio di Studio "Giovanni Zampese" Edizione XXVI – Dec. 2024

BCC Cantù – December 2024

- A recognition awarded annually by Banca di Credito Cooperativo (BCC) di Cantù to outstanding students upon completing their academic journey.

Thesis Program Award - Scientifica Venture Capital Aug. 2024

Scientifica Venture Capital – August 2024

- I have been selected as a winner of the Thesis Program by Scientifica Venture Capital for my master's thesis, "Deep Models of the Human Cortex to Predict fMRI Responses to Visual Scenes."
- The Thesis Program recognizes outstanding theses in STEM fields, awarding those who demonstrate originality and innovation.

Skills

Programming Python, R (tidyverse), SQL, Bash, HTML
Machine Learning scikit-learn, PyTorch, TensorFlow (Keras)
Data Visualization Tableau, Python (matplotlib, seaborn, Plotly), R (ggplot2)
Operating System Windows, Linux
Tools Git, Jupyter Notebooks, Microsoft Office Suite, LaTeX, Markdown, Knime, Tableau
Languages Italian (native), English (full professional proficiency – C1 listening, reading | B2 writing, speaking)
Certifications Bbetween Languages – English C1, Chemistry Eurobachelor®, AICA e4job – Digital culture for work

«I authorize the processing of my personal data in the curriculum vitae in accordance with Legislative Decree No. 196 of June 30, 2003, “Codice in materia di protezione dei dati personali” and the GDPR (EU Regulation 2016/679). »

Milano (MI), 02/12/2024