

# Giulio Carpi

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## PROFESSIONAL EXPERIENCE

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**Software Engineer Intern, Siemens Digital Industries Software, Toulouse, France** Feb 2025 - Aug 2025

- Developed a 3-layer module (C# WPF UI → C++/CLI interop → native C++) processing real-time sensor data for collision avoidance and reactive trajectory planning.

**Skills Developed:** C++, C#, C++/CLI, .NET (WPF), Visual Studio 2022, Git/Git Extensions, Scrum Methodology.

**Software Engineer Intern, Cemosis - CNRS spin-off, Strasbourg, France** Jun 2024 - Aug 2024

- Built a C++ pipeline that sourced urban elevation data via Mapbox Terrain-RGB API, processed it and generated Delaunay 3D terrain meshes constrained to contour lines. Part of European HiDALGO2 and NumPEX Exa-MA for exascale computing.

**Skills Developed:** C++, Visual Studio Code, Git, GitHub, Docker, CI/CD tools, MeshLab, Gmsh, Agile Methodology.

## ACADEMIC PROJECTS

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**Symbolic Regression** Nov 2024 - Jan 2024

- Built a reduced-order model for 1D advection-diffusion PDE using finite differences, convolutional autoencoder (PyTorch) for latent compression, and SINDy-like symbolic decoder for interpretable expressions.

**Exa-MA WP1 - Vegetation** Mar 2024 - Jun 2024

- Developed a C++ application sourcing urban vegetation data from OpenStreetMap via the Overpass API and integrating it into 3D urban models to enhance thermal and energy simulations.

## EDUCATION

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**MSc in Applied Mathematics** University of Strasbourg, France Sep 2023 - Aug 2025

*Specialization: Scientific Computation and Mathematics of Innovation*

- Key Subjects:** Machine Learning and Deep Learning (TensorFlow, PyTorch, scikit-learn), Scientific Machine Learning (PINNs, ROM), Data Processing and Mining, Numerical Methods for PDEs (FEM, FVM), Signal and Image Processing, High-Performance Computing (MPI, OpenCL, GPU), Optimization, Uncertainties, Databases (SQL/NoSQL).

**BSc in Applied Mathematics** University of Strasbourg, France May 2023

- Key Subjects:** Differential and Integral Calculus, Ordinary Differential Equations, Computer Science, Probability and Statistics, Linear Algebra, Fourier Analysis.

## TECHNICAL SKILLS

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**Programming Languages/Frameworks:** C/C++, C#, C++/CLI, Python, Julia, R, SQL, Bash.

**Libraries & Tools:** TensorFlow, PyTorch, scikit-learn, NumPy, Pandas, Matplotlib, CGAL, .NET (WPF), OpenCL, MPI.

**Machine Learning & AI:** Regression, Classification, Clustering, Neural Networks (ANN, RNN, CNN), Deep Learning, Generative Models, Scientific ML, Uncertainty Quantification.

**Modeling, Simulation, & Optimization:** Numerical Methods for PDEs, FEM, FVM, Optimization Techniques.

**Other:** Git/Git Extensions/GitHub, Docker, CI/CD, Visual Studio, Agile/Scrum Methodologies.

## LANGUAGES

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**English** (Professional proficiency - C1) • **French** (Native speaker) • **Italian** (Native speaker)