

Matthieu Benoit

Gap year internship

Paris, France

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Portfolio:

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Second-year engineering student at Mines Paris – PSL, specializing in computer science, data analysis, quantitative modeling and fundamental physics. Strong experience in Python, real-time C++ simulations, and full-stack development. Passionate about building high-performance systems and solving complex engineering problems.

Programming Languages: Fluent English, Python, C++, SQL

Languages: French (native), English (fluent)

Web: HTML5, CSS3

Data & AI: NumPy, Pandas, Matplotlib, SciPy, PyTorch

PROJECTS

Physically-based underwater ray tracing simulation – C++

- Implemented a physically accurate Monte-Carlo ray tracer simulating underwater light scattering and absorption

Image-based quality control algorithm for LHC chip detector production – Python

- Built a complete data processing pipeline for automated quality control

Real-time C++ simulation of the transition to chaos of a bouncing ball – C++, Python

- Visualized bifurcation and chaotic regimes in real time

Diffusion model using denoising neural networks and Langevin sampling – Pytorch

- Trained a neural network to produce images based on a prompt

Self-balancing Segway mechatronics project – CAD (Fusion), Arduino

- Built the robot and tuned its parameters to make it roll without falling

Birds flight simulation (Boids model) – C++

- Implemented behavioral laws to reproduce and visualize birds motion

Guestbook internet website – Python (Flask), Html, Css, Sqlite3

- Homework : website to post or delete opinions and read that of other people

Portfolio website – Html, Css

EDUCATION

Mines Paris – PSL University

Engineering Degree (Grande École Program) – Computer Science, Applied Mathematics & Physics 2024 – 2027



EXPERIENCE

- Particle physics internship – IRFU, CEA of Paris-Saclay – Saclay, France – From November 2025 to February 2026
- Construction site operator internship – Eiffage – Nancy, France – Mai 2025
- Private Tuition – Cahier vert – Paris, France – From September 2025 to September 2026
- Resort animator – Capfun – Avrillé, France – From July 2023 to August 2023

-Resort sport teacher – VTF – Céreste, France – July 2022