Matthieu Benoit

Gap year internship

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Portfolio : portfolio-matthieu-benoit.vercel.app

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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