

# Matthieu Benoit

## Gap year internship

Paris, France

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Portfolio:

[portfolio-matthieu-benoit.vercel.app](https://portfolio-matthieu-benoit.vercel.app)

[github.com/matthieu-benoit](https://github.com/matthieu-benoit)

[linkedin.com/in/matthieu-benoit-4423a8329](https://linkedin.com/in/matthieu-benoit-4423a8329)

*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

