

PAUL DUBOIS

“leveraging science for a better world”

EDUCATION

PhD, CENTRALESUPELEC, UNIVERSITE PARIS-SACLAY

Oct 2021 – Dec 2024

In partnership with **TheraPanacea**, conferences and publications:

- "Radiotherapy Dose Optimization via Clinical Knowledge based Reinforcement Learning", Artificial Intelligence in Medicine (AIME), 2024
- "Clinically Dependent Fully Automatic Treatment Planning System", American Society for Radiation Oncology (ASTRO), 2024
- "A Novel Framework for Multi-Objective Optimization and Robust Plan Selection Using Graph Theory", European Society for Radiotherapy and Oncology (ESTRO), 2024
- "Dose Volume Histograms Guided Deep Dose Predictions", Société Française de Physique Médicale (SFPM), 2024
- "Attention Mechanism on Dose-Volume Histograms for Deep-dose Predictions", Société Française de Radio Oncologie (SFRO), 2024

Worked on **novel AI architectures and training methods** to advance automatic treatment planning in radiotherapy. The goal was to automate and improve the treatment planning process, which is currently time-consuming and highly expert-dependent. We used PyTorch, training from scratch AI models to perform dose optimization automatically.

MSC MATHEMATICAL SCIENCES, OXFORD UNIVERSITY

Sept 2020 – July 2021

Dissertation on Random Fractals and Branching Processes.

MSCI MATHEMATICS, UNIVERSITY COLLEGE LONDON

Sept 2016 – July 2020

Research project on modular forms mod 2: “Governing Fields For The Hecke Algebra”.

EXPERIENCE

FREELANCE AI ENGINEER & DATA SCIENTIST

Jan 2025 – Present

Main current client: **Surgitec**, developing **AI software** for Deep Brain Stimulation (DBS).

- Trained **models for the segmentation** of sensitive regions in the brain using MRI.
- Designed a **cost function for ranking** candidate trajectories for DBS.
- Created a new **algorithm for best trajectories selection**.

PART TIME FREELANCE DATA SCIENTIST

Oct 2021 – Dec 2024

Data science projects (from scrapping to analysis).**INTERN, ROOM FURNISHER**

July – Sept 2020

Created the **MVP of the startup**, bringing together open-source projects.**INTERN, AIRBUS**

Jun – Sept 2019

Designed tools for **process automation** using SQL, {HTML, CSS, and JS}, and Python.

TEACHING

DEEP LEARNING, CENTRALESUPÉLEC (PARIS)

Jan – Mar 2023, 2024, 2025

Course for 5th year master engineering students, **taught in French**.

Content: deep learning from scratch (back-propagation), perceptron, convolutions, optimizers & learning rates, RNN, U-net, V-net, GANs; with Kaggles created as homework.

MATHEMATICS, ESSEC (CERGY)

Sept 2021, 2023, 2024, 2025

“Mathematics Refresher” course for DSBA (Master Students), **taught in English**.

Content: basic methodologies for proofs; linear algebra, differential calculus, integration, and asymptotic analysis; prerequisites of the courses in the master.

DATA ANALYSIS, IRONHACK (BARCELONA)

July – Aug 2023

9 weeks bootcamp, **taught in English**.

Content: Python, SQL, Web Scraping, Tableau, Probabilities & Statistics, Basics of AI/DL.

TUTORIAL SESSIONS, CENTRALESUPÉLEC (PARIS)

Oct 2021 – Dec 2024

Coding, Optimization, Algorithms & Complexity, Computer Science; **taught in French**.