Paul Devianne

Master Project in Deep Learning

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Education

Swiss Federal Institute of Technology • Master in Applied Mathematics August 2022 – Present
Lausanne, Switzerland • Specialization: Computational Science and Engineering
Takeaway: Deep learning, Algorithms, Numerical Simulation theories. Applied projects. Academic research.

Swiss Federal Institute of Technology • Bachelor in Physics August 2019 – August 2022
Lausanne, Switzerland • Exchange at **KTH Stockholm** (August 2021 - August 2022)
Takeaway: Strong physics background (Mechanics, Thermodynamics, Electrodynamics, Quantum Mechanics, QFT). Strong mathematical background (Calculus, Algebra, Geometry). Abstract thinking.

Professional Experience

Deep Learning Intern – *General Electrics HealthCare* September 2024 – Feb 2025
Paris, France

- Create a database for malign object detection in 3D breast CT images from simulated physics environment.
- Develop and test a deep learning model on that database.
- **Keywords: Deep Learning, Reconstruction algorithm, Physical Phantom, Image processing**.

Teaching Assistant – *EPFL* September 2020 – July 2024
Lausanne, Switzerland

- Organise class/exercise sessions with first and second year EPFL Bachelor students. Assist the Full Professor.
- TA Courses: C++ Programming in Physics (Pr. Villard), Linear Algebra (Pr. Pouchon)
- **Keywords: Communication, Pedagogue**

Projects

Deep Learning for constitutive laws of materials – *EPFL LSMS* Jan 2024 – July 2024

- Deep learning to simulate physics of materials – 3D U-net – Model tuning – Data augmentation – QC & QA.
- **Keywords: PINN – Research experience**(with Dr. Fourel, Pr. Brady)
- *Tools: Python [Pytorch], MLflow, GoogleScholar, Git, AWS EC2*

Software for Monte-Carlo approximation of functions in C++ – *EPFL* Sep 2023 – Jan 2024

- Design, optimize, factorize OOP code to build an efficient C++ library for mathematical computation.
- *Tools: C++ [std library, Eigen, Boost], Doxygen, Git, VSCode, GoogleTest.*

QC/QA Super-Resolution Reconstruction of fetal brain MRI – *EPFL & MIAL* Jan 2023 – July 2023

- Deep Learning frameworks to reconstruct 3D volume of the fetal brain from MRI. Establish and validate metrics for the QC & QA.
- **Keywords: QA, Deep Learning, Complex pipelines.**
- *Tools: Python [Pytorch, SimpleITK], ITK-Snap, Git, Docker, VSCode, Ubuntu.*

Technical Skills

- **Languages:** French (Native), English (C1/C2), Spanish (A2), Chinese (HSK2)
- **Programming languages:** Python, C++, Matlab, CLI, C, JSON, LaTex
- **Machine Learning & Data science:** Pytorch, Pandas, Skicit-learn, Scipy, MLflow
- **Parallel and High-performance computing:** CUDA (C++), OpenMP, MPI, Cloud computing (AWS EC2 instance, EPFL clusters)
- **Soft skills:** Persistent, Social awareness, Pedagogue,

Extra Curricular Activities

- Volunteer work with exchange students coming to EPFL. Sports/Cultural event planning.
- Long-distance run (half-marathon Milan / Lausanne / Paris), Badminton, Football.

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