Marius Duvillard

Applying for: Full-time Position in Machine Learning and Simulation

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Description

I am a PhD candidate in Applied Mathematics with a strong interest in machine learning, probabilistic methods, and their application in simulation. I am currently seeking a full-time position in these fields.

Experience

Ph.D. Student in Applied Mathematics — **CEA, Cadarache France** — **01/10/2021 – Present**

- Data Assimilation for Lagrangian Simulation.
- Developed a simulation tool for granular materials using the Material Point Method (MPM).
- Adapted Ensemble Kalman Filter for intensity correction and a variational approach for position correction.
- Applied to solid mechanics problems (MPM) and incompressible fluid dynamics (Vortex Method).
- Presented work at ECCOMAS 2024 and PARTICLES 2023 and published.

Machine Learning Intern — **CEA, Cadarache France** — **04/2021 – 04/2021**

- Developed neural networks constitutive models for nonlinear elastic and elastoplastic laws.
- Implemented a semi-supervised approach for penalization.
- Presented monthly progress updates within an international working group

Mechanical Engineer Intern — **Framatome, Paris France** — **06/2020 – 08/2020**

- Studied thermal stratification in elastoplastic flexibility calculations.
- Defined a new model based on beam and shell elements.
- Integrated and applied the model on complex piping geometries.

Intern - Account Manager — **La Poste, Nantes, France** — **07/2019 – 08/2019**

- Customer reception, sales, advice, merchandising.
- Improved skills in commercial relations and adaptability.

Education

Ecole Polytechnique — **01/10/2021 – Present**
Ph.D. in Applied Mathematics — *Palaiseau, France*
Working with the X/Inria project-team PLATON

Ecole Centrale de Nantes — **01/09/2018 – 31/08/2021**
Engineering Student — *Nantes, France*
Data analysis and applications in signal and image processing
Advanced Modelling and Analysis of Structures

Lycée Descartes — **01/09/2016 – 31/07/2018**
Preparatory Classes for Engineering Schools — *Tours, France*

Skills

- **Machine Learning:** Pytorch, Scikit-learn, Keras
- **Scientific Programming:** Python, (Pandas, Numpy, Scipy, Plotly, etc.), Cpp
- **Mechanics:** Gmsh, Abaqus, Ansys Apdl
- **Others:** Git, LaTeX

Languages

- **French:** Native
- **English:** Professional working proficiency (TOEIC: 935)

Interests

- **Music:** Ancient and traditional music with galoubet tambourin, recorder, and diatonic accordion
- **Sports:** Rowing, running, trekking
- **Reading:** Favorite novelists include Stefan Zweig, Henri Bosco, Marguerite Yourcenar, and Jean Giono GoodReads