SOTHEA HAS

PhD in Applied Mathematics

Contact

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59 Avenue Jean Jaurès,
Vitry-sur-Seine, France

Education

PhD in Applied Math

Sorbonne Unversité, Paris, France
2022

Master of Data Science

Université Paris Diderot, Paris, France
2018

Engineer of Applied Math

ENSIIE, Evry, France
2018

Bachelor of Pure Math

Royal University of Phnom Penh, Cambodia
2014

Language

Khmer: mother tongue

English: fluent

French: conversational

Other skills

Critical thinking

Teamwork

Communication

Time management

Summary

I specialize in both theoretical and applied Machine Learning (ML), Statistics, and Data Science, with a strong focus on atmospheric science (postdoctoral research). I am proficient in **Python** (including library development), **PyTorch**, **R**, **C++**, and **MATLAB**. My recent research interests focus on exploring the theories and applications of Variational Autoencoders (VAE) and generative models such as Stable Diffusion within atmospheric science.

Experience

Postdoctoral researcher — **Sep 2022 - Present**

Laboratoire de Météorologie Dynamique - ENS

- Reconstructing balloon-observed gravity wave momentum fluxes using ML and inputs from ERA5.
- Extracting important features for the reconstruction.
- Physical interpretation.

PhD research — **Aug 2018 - Aug 2022**

LPSM - Sobronne Université

- Combine supervised and unsupervised methods for energy modeling.
- Aggregation methods.
- Build "**gradientcobra"** python library.

Teaching assistant — **Sep 2018 - Mar 2024**

UFR Mathématiques - Université Paris Cité

- Data Analysis with R and Rstudio.
- Data Mining with R and Rstudio.
- Exploratory Data Analysis with R and Rstudio.
- Algorithm and Programming with Python.
- Big Data Technologies with Python and Spark.
- Statistical Inference and Data Modeling.

Publication

- Estimating balloon-observed gravity wave momentum fluxes using ML & input from ERA5. *Published in JGR - Atmosphere*, **2024**.
- Gradient COBRA: A kernel-based consensual aggregation for regression. *Published in Journal of Data Science, Statistics and Visualization*, **2023**.
- A consensual aggregation of randomly projected high-dimensional features of predictions. *Available in HAL*, **2022**.
- Machine learning methods applied to the global modeling of event-driven pitch angle diffusion coefficients during high-speed streams. *Published in Frontiers Physics*, **2022**.
- KFC: A clusterwise supervised learning procedure based on aggregation of distances. *Published in Journal of Statistical Computation and Simulation*, **2021**.