Contact

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Phnom Penh, Cambodia

Education

PhD in Applied Math

Sorbonne Unversité, Paris, France
Topic: Theoretical & Applied ML
2022

Master M2MO

Université Paris Diderot, Paris, France
Main focus: Financial Math & Data Science
2018

Engineer of Applied Math

ENSIIE, Evry, France
Main focus: Financial Math & Data Science
2018

Bachelor of Pure Math

Royal University of Phnom Penh, Cambodia
Main focus: Pure mathematics
2014

Language

Khmer: mother tongue

English: fluent

French: conversational

Other skills

Critical & mathematical thinking

Teamwork

Communication

Time management

SOTHEA HAS

PhD in Applied Mathematics

Summary

I specialize in theoretical and applied Machine Learning (ML), Statistics, Stochastic Modeling, 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 applying **Transfer Learning Neural Networks** within atmospheric science. I am also currently analyzing the dynamics of the **Stochastic Gradient Descent (SGD)** algorithm using **Stochastic Processes**.

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.
- Analyzing **SGD** algorithm using continuous-time **stochastic processes**.

PhD research — Aug 2018 - Aug 2022

LPSM - Sobronne Université

- Combine supervised and unsupervised methods for energy modeling.
- Consensual & high-dimensional aggregation methods.
- Build "**gradientcobra"** python library.

Teaching

UFR Mathématiques - Paris 7 — **Sep 2018 - Mar 2024**

- 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.

Institute of Technology of Cambodia — **Sep 2024 - Present**

- Statistics (Year 3)
- Exploratory Data Analysis & Unsupervised Learning (Year 5)
- Advanced Machine Learning (Master 2)

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**.