

Sothea Has --- Ph.D. in Applied Mathematics





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SKILL SUMMARY ---

Postdoc	Apply statistical and machine learning methods in atmospheric science.
Ph.D.	Theoretical machine learning: clustering, aggregation methods, and energy modeling.
Teaching	Theoretical and practical insights in machine learning, statistics, data analysis and modeling.
Coding	Python () , R () in Rstudio () , C++ () and other languages.

EXPERIENCES ---

2022-Present **CNRS, LPSM Université Paris Cité and LMD École Polytechnique**

Postdoc **Improving parametrizations in climate modeling using statistical and machine learning.**

- 🔗 Modeling the balloon-observed Gravity Wave Momentum Fluxes (GWMF).
- 🔗 Extracting important features for reconstruction.
- 🔗 Interpreting and providing information of the stochastic component of GWMFs.









2018 - 2022 **LPSM (UMR 8001) - Sorbonne Université**

Ph.D. **Theoretical study and applications of machine learning methods.**

- 🔗 Energy data modeling using supervised and unsupervised machine learning algorithms.
- 🔗 Aggregation method for regression problems.
- 🔗 Aggregation method in high dimension.

2018 - Present **UFR Mathematics Université de Paris**

Teaching **Master 1 and Master 2**

- 🔗 Practical class of Data Analysis with  and  , Master 1 ISIFAR.
- 🔗 Practical class of Data Mining with  and  , Master 2 ISIFAR.
- 🔗 Practical class of Exploratory Data Analysis with  and  , Master 1 EDA.
- 🔗 Practical class of Algorithm and Programming with  , Licence 2 MIAHS.
- 🔗 Practical class of Big Data Technologies with  and **Spark**, Master 1 MATINF.
- 🔗 Tutorial class of Statistical Inference and Data Modeling, Master 2 M2MO.

2018 **LPSM (UMR 8001) Université de Paris**

M2 internship **Predictive models based on clustering with Bregman divergences and local predictions**

- 🔗 Analyzing the sensitivity of K-means clustering with Bregman divergences.
- 🔗 Constructing local models on different configurations of clusters.

2017 **Laboratory of TELECOM SudParis**

M1 internship **Study of optimization problems with marginal simulated annealing algorithm**

PUBLICATIONS ---

2023 **Estimating balloon-observed gravity wave momentum fluxes using ML & input from reanalysis.**

Status *In progress, with R. Plougonven, A. Fischer, R. Rani, F. Lott, A. Hertzog, A. Podglajen, M. Corcos.*

2023 **Gradient COBRA: A kernel-based consensual aggregation for regression.**




Status *Published at Journal of data Science Statistics and Visualisation, single author.*

- 2022 **A consensual aggregation on randomly projected high-dimensional features of predictions.**
 Status *Published in HAL, single author.*
- 2022 **Machine learning methods applied to the global modeling of event-driven pitch angle diffusion coefficients during high-speed streams.**
 Status *Published in Frontiers Physics, with G. Kluth, J.F. Ripoll, A. Fischer, M. Mougeot, and E. Camporeale.*
- April 2021 **KFC: A clusterwise supervised learning procedure based on aggregation of distances.**
 Status *Published in Journal of Statistical Computation and Simulation, with A. Fischer and M. Mougeot.*

EDUCATION

- 2022 - Present **CNRS, LPSM - Université Paris Cité & LMD - École Polytechnique, France**
 Title **Postdoctoral researcher in atmospheric science**
 Research topic Reconstruct Gravity Wave Momentum Flux using statistical and machine learning methods.
- 2018 - 2022 **Sorbonne University Pierre and Marie Curie - Paris 6, France**
 Title **Ph.D. in Applied Mathematics**
 Research topic *Consensual aggregation and distance measurements for statistical learning. Theoretical contributions and applications to the field of energy.*
- 2017 - 2018 **University Paris Diderot - Paris 7, France**
 Title **Master 2 Random Modelling and Data Science (M2MO)**
 Project Data Science for Company, Massive Data Processing (R-programming).
 Exam Statistical Learning, Statistical Modeling, Diffusion Statistics, Stochastic Calculus.
 Both Machine Learning , Monte Carlo Method .
- 2016 - 2017 **École Nationale Supérieure d'Informatique pour l'Industrie et l'Entreprise - ENSIIE, France**
 Title **Master 1 Applied Mathematics**
 Project Time Series, Simulation Methods, Research Project in Finance, Machine Learning.
 Exam Stochastic Process, Operation Research, Stochastic Calculus in Finance.
 Both Data Analysis, Numerical Methods for PDE, .
- 2009 - 2015 **Royal University of Phnom Penh - RUPP, Cambodia**
 Title **Bachelor's Degree and Master 1 of pure mathematics**

LANGUAGES & PROGRAMMING

- Languages Khmer (Mother tongue), English (fluent), French (conversational)
- Programming : tidyverse, dplyr, ggplot, plotly, ...
: Numpy, Pandas, TensorFlow, Scikit-learn, PySpark, ...
 Others: , Matlab, Scilab, \LaTeX .

PERSONAL INTEREST

- Reading Behavioral science and meditation.
- Sport Volleyball, basketball and football.
- Other interest Music, guitar, and drawing.