Ariane Ducellier

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Personal profile

Applied Scientist Professional and **PhD holder** with 10 years' experience designing **statistical models** and carrying out **scientific research** to solve real world problems. Proven track record in **framing research questions** and **conducting data-driven studies** that lead to practical solutions. I am now looking to leverage my data analysis, project management and cross-functional collaboration skills to **find solutions** that improve business operations.

Expertise

- Data Science: Machine Learning, Deep Learning, Time Series Analysis, Forecasting, Statistical Inference, Stochastic Modeling, Data Visualization, Optimization, Causal Inference.
- Programming: Python (Pandas, Pyspark, Scikit-learn, Pytorch), R (RStudio, tidyverse, Shiny), Git, SQL, Cloud computing (AWS).
- Designing data modeling pipelines from data collection to data analysis, model development, model parameters tuning, model evaluation and productionalization.
- Translating open-ended business problems into data metrics and mathematical modeling to tailor solutions for the greatest possible impact.
- Communicating insights from data analyses to stakeholders and technical and non-technical audiences.
- Staying up-to-date to the latest developments in the field and innovating to incorporate novel research techniques into products.

Professional experience

2023–Present **Researcher**, Institute for Health Metrics and Evaluation, Seattle, WA.
- Develop mathematical methods and computational codes to adjust data sample weights of contingency tables to match desired marginal totals.
- Maintain the team's computational codes and answer questions from users across IHME through office hours and help-desk tickets.
- Taught a quarter-long course on data visualization with R.

2022–2023 **Applied Scientist**, Zillow, Seattle, WA.

Originally started as an academic intern (Summer 2021), then hired full-time.
- Designed data modeling pipelines from data collection to data analysis, model development, model evaluation and productionalization.
- Analyzed and interpreted datasets and developed statistical models and computational codes to forecast housing market trends, giving internal teams access to the latest data and insights for planning business operations as well as external communications.
- Delivered forecasts to stakeholders on a monthly basis, providing real-time data for decision making.
- Evaluated errors on statistical models, informing stakeholders of the uncertainty on the results.

2016–2022 **Research Assistant**, University of Washington, Seattle, WA.
- Executed research to understand slow earthquake phenomena and subduction zone processes. Results included 3 published articles in prestigious scientific journals within the field of Earth science and 3 presentations in high-level international conferences in data science.
- Performed statistical analysis and signal processing of large seismic datasets providing critical information about earthquake mechanisms.
- Conceived and taught labs on data science and machine learning for Earth and planetary systems, training students to perform their own research and meet academic requirements.
- Volunteered to teach a tutorial in a week-long workshop on geospatial data science to students, researchers and industry experts.

2006–2015 **Research Scientist**, The French Geological Survey, Orléans, France.

- Developed computational codes (C, MPI) to model seismic wave propagation.
- Created a computational code (C♯) for the vulnerability assessment of utility networks and buildings, providing critical data for proactive planning and building reinforcements.
- Leveraged graph models to forecast and mitigate network disruptions following natural disasters.
- Contributed to internal and external funding proposals.

Fall 2010 and Fall 2011 **Visiting Research Scientist**, Kyoto University, Kyoto, Japan.

- International collaboration with several Japanese researchers.
- Wrote global optimization codes (Fortran, OpenMP) for nonlinear inverse problems resulting in an innovative method to model earthquake ground displacement for civil engineering purposes.

Education

2016–2022 **PhD**, University of Washington, Seattle, WA.

- Earth & Space Sciences and Data Science.
- 3 published articles in prestigious scientific journals within the field of Earth science.
- 3 presentations in high-level international conferences in data science.

2021 **Master of Science**, University of Washington, Seattle, WA.

- Statistics, Advanced Data Analysis.

2001–2004 **Master**, Universite Paris-Saclay, France.

- Executive Engineering and Applied Mathematics.