

Phiala Thouvenin, Ph.D.

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EXPERIENCE

Purdue University

Research and Teaching Assistant

August 2013 – July 2022

West Lafayette, IN

- Conceptualized and carried out multidisciplinary physical and numerical scientific experiments, leading to several conference presentations and the development of several manuscripts.
- Formulated algorithms in MATLAB and Python's pandas library to process and analyze experimental time-series data, resulting in large (100 million row+), well-organized tabular datasets, along with detailed scientific visualizations.
- Provided mentorship to numerous students and researchers, guiding them in the application of scientific techniques, software, and equipment, and resulting in academic presentations and dissertations.
- Oversaw multiple instructors, enhancing the overall quality of teaching within the department, and resulting in the recognition of instructional and advisory excellence through several awards.

The University of Akron

Graduate Research Assistant

August 2011 – August 2013

Akron, OH

- Conducted and executed numerical experiments using MATLAB, C, and Fortran, culminating in the publication of research in peer-reviewed journals and conference presentations.
- Developed innovative algorithms and streamlined workflows for the generation, processing, and visualization of scientific data, enhancing efficiency and facilitating data-driven insights.
- Secured grants from multiple funding agencies, accelerating the pace of research completion. Utilized grant funding for travel and collaborative initiatives with other scientists.

The University of Akron

Undergraduate Research Assistant

January 2009 – August 2011

Akron, OH

- Completed two senior research projects collaboratively with diverse teams, yielding multiple manuscripts and academic presentations.
- Employed advanced data analysis techniques in Excel and MATLAB, devising innovative methods for data acquisition, visualization, and statistical inference.
- Instructed undergraduate students in advanced courses focused on scientific data analysis and visualization, facilitating a deeper understanding of course materials, and enhancing students' proficiency in data-related concepts.

EDUCATION

Purdue University

Ph.D., Geophysics

July, 2022

West Lafayette, IN

The University of Akron

M.S., Geology

August, 2013

Akron, OH

The University of Akron

B.S., Geology

August, 2011

Akron, OH

SKILLS

- **Languages:** Python, MATLAB, Fortran, C, Perl, R, SQL
- **Developer Tools:** Git, VS Code, Jupyter Notebooks, Spyder
- **Libraries:** Pandas, Polars, NumPy, SciPy, Matplotlib, scikit-learn, PyTorch
- **Other Skills:** Report Writing, Data Visualization, Big Data (*HDF5*), Shell scripting, Adobe Products, Linux Tools

PROJECTS

Purdue University

2015 – 2022

- DISSERTATION: *The Impact of Erosion on Exhumation and Structural Configuration in Mountain Belts: Insights from Image Velocimetry Analysis of Coulomb Wedge Models*
 - Simulated the growth and erosion of mountain systems using tools such as MATLAB (for digital image processing) and Python (for data processing, analysis, and visualization).
 - Utilized detailed visualizations and statistical inference on complex time-series data to analyze changing parameter spaces, demonstrating their impact on overall experimental behavior.

The University of Akron

2011 – 2013

- THESIS: *The Work Budget of Rough Faults*
 - Numerically simulated geologic fault systems with Fortran, C, and MATLAB.
 - Employed statistical tools to identify influential parameters affecting system efficiency.
- *Methamphetamine-Related Criminal Activity in Summit County, Ohio; 2002-2012.*
 - Analyzed geospatial crime-related databases in ArcGIS, Excel, and MATLAB, also employing web scraping techniques for unstructured data.
 - Determined spatial and temporal patterns of methamphetamine-related crime statistics.
- *Orientation Determination for the Northridge Fault Using Least-Squares and Partial Derivative Methods.*
 - Examined earthquake location data in MATLAB, employing mathematical techniques to fit the Northridge Fault orientation.
 - Determined a least-squares method as the most accurate for overall fault geometry.

The University of Akron

2009 – 2011

- SENIOR PROJECT: *Damage Zone Cracks Formed Under Quasi-Static and Dynamic Loading Conditions: Insights from Field Observations, Experiments, and Theory.*
 - Analyzed microscopy images with Adobe products and MATLAB.
 - Presented work at national conferences and collaborated with researchers from other universities.
- SENIOR PROJECT: *Soil Magnetism as a Function of Pollution, Place, and Time.*
 - Processed environmental pollution data using Excel and MATLAB, determining pollution levels in soil samples based on proximity to urban roads.
 - Collaborated with and presented findings to external researchers.