David Alan Rimel

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EDUCATION

Michigan State University

M.S. Computational Mathematics, Science and Engineering　　　　*August 2018 – December 2020*

- Cumulative GPA – **3.97/4.0**

University of Colorado at Boulder

B.S. Engineering Physics　　　　*Fall 2013 – Fall 2016*

- Honors – **Summa Cum Laude**.
- Cumulative GPA – **3.89/4.0**.

EXPERIENCE

Graduate Teaching Assistant　　　　*August 2020 – December 2020*

Michigan State University

Class: CMSE202 Computational Modeling Tools and Technology

Teaching Experience:

- Gained experience leading classroom discussions and organizing class structure.
- Taught students how to effectively use common data science libraries such as Pandas, Scikit-Learn, Keras, Numpy/Scipy, and Matplotlib.
- Taught basic data science and machine learning concepts.
- Guided many successful end of semester student data science projects.

Graduate Research Assistant　　　　*August 2018 – July 2020*

Michigan State University

Advisor: Dr. Michael Murillo

Research Experience:

- Developed a Genetic Algorithm to discover the set optimal model parameters for physics simulation codes run for specific material temperatures and densities. Using Gaussian Process Regression, the optimal modal parameters were then predicted for new material temperatures and densities without the need for running expensive simulation codes.
- Parallelized a particle simulation code written in python for distributed memory computing systems.

Mentoring Experience:

- Mentored an undergraduate research assistant who developed a symbolic neural network.

Computational Photonics Engineer　　　　*May 2016 - June 2018*

TechX Corporation

Research Experience:

- Developed advanced physical simulations and algorithms to study photonic devices.
- Ran simulation code on high-performance distributed memory computing systems.
- Gained experience communicating complicated research ideas by writing a paper for and presenting at an engineering conference.

Software Experience:

- Developed scientific post processing tools in python.

- Implemented and tested new features for a commercial code base.

Undergraduate Physics Research   *Fall 2015 – October 2016*
University of Colorado
Advisor: Dr. John Cary and Dr. Greg Werner

Research Experience:
- Optimized the Particle-in-cell deposition method for multicore and vector cpu architectures.
- Wrote and defended an undergraduate thesis on how to optimize the Particle-in-cell algorithm for speed through maximizing the use of architectural features of current cpus.

Software Experience:
- Gained experience optimizing code for multicore CPUs using multithreading, vectorizing and efficient memory access.
- Gained experience using an SVN and GIT repo.

Algorithm Development   *October 2014 – August 2015*
Laboratory for Atmospheric and Space Physics, LASP

Software Experience:
- Developed data correction algorithms for the solar instruments aboard the Upper Atmosphere Research Satellite.
- Used test based development practices to develop mathematical data analysis tools in Java.

RELEVANT CLASSES

- **Parallel Computing**
- **Numerical Methods for Partial Differential Equations**
- **Numerical Linear Algebra**
- **Introduction to Machine Learning**
- **Mathematical Foundations of Machine Learning**
- **Applied Machine Learning**
- **Computer Systems**
- **Introduction to Algorithms**
- **Data Structures**

COMPUTING SKILLS

Languages
- **Python, C/C++, Julia**

Libraries
- **MPI4py, OpenMPI, Numba, Numpy/Scipy, OpenMP, Cuda, Scikit-learn, Tensorflow Pandas, keras**

Programs
- **Mathematica, Git, SVN, Solidworks, FreeCAD**

AWARDS

Award for Outstanding Early Graduate Student	*2019*
Engineering Physics Outstanding Graduate Award	*2016*
Outstanding Undergraduate Research Award	*2016*
Stephen Halley White Undergraduate Research Award	*2016*