

## Education

### University of Maryland, College Park, 2020 – Present

Applied Mathematics and Statistics, and Scientific Computation

- Currently finishing PhD
- Research Interests: randomized numerical linear algebra, low-rank matrix approximation, matrix sketching, column subset selection problem, sparse data, natural language processing

### Georgetown University, School of Continuing Studies, 2018

Certificate in Data Science

- Courses: Python Basics for Data Analysis, SQL Fundamentals, Software Engineering for Data Science, Data Sources and Storage, Data Ingestion and Wrangling, Data Analysis I: Statistics, Data Analysis II: Machine Learning, Visual Analytics
- Tools: Python, SQL, Git, GitHub, Jupyter Notebook
- Team project completed: Med-Students-Learning-Analytics
  - GitHub page: <https://github.com/georgetown-analytics/Med-Students-Learning-Analytics>
    - Files I coded: [Exploratory Data Analysis.ipynb](#), [Statistical Analysis.ipynb](#)
  - Team role: data analyst/statistician
  - GitHub username: klinehan1

### University of Maryland, College Park, 2006 – 2011

Applied Mathematics and Statistics, and Scientific Computation, ABD

- Advanced to Candidacy, June 2011
- M.S., December 2009
- Courses: Scientific Computing, Numerical Analysis, Parallel Algorithms, Operations Research
- M.S. Paper: [Information Retrieval Through Various Approximate Matrix Decompositions](#)
  - Included managing matrix data and implementing 7 (out of 9) matrix decompositions from scratch
  - Code in MATLAB
- Research Interests: numerical linear algebra, information retrieval, low-rank matrix approximation, sparse matrix approximation, parallel algorithms, scientific computing on GPU (graphics processing unit)

### Hood College, Frederick, MD, 2003-2006

- B.A. in Mathematics, Minor: Computer Science, May 2006
- Summa Cum Laude, Departmental Honors, Honors Program
- Computer Programming Team – captain
- Basketball Team – captain

### University of Maryland, College Park, 2002-2003

- Honors Program

## Employment History

### Research Scientist

Social and Decision Analytics Division (SDAD), Biocomplexity Institute, University of Virginia (UVA)

January 2020 – Present

- Visiting Research Scientist from January 2020 – June 2020
  - Leave of absence from Montgomery College for the Spring 2020 and Summer 2020 semesters
- Team-based research utilizing SDAD's Data Science Framework
- Tools: Python including Scikit-Learn and Gensim, R, Git & GitHub
- Computing Environment: UVA's High-Performance Computing system (Linux, many nodes and cores per node, GPUs available)
- Highlighted Projects:
  - [Discovering Emerging Trends for U.S. Federally-funded R&D:](#)
    - Day-to-day lead for the project
    - My contributions: natural language processing, cleaning text data, topic modeling using probabilistic and linear algebra algorithms, information retrieval, document similarity, text mining, investigating evaluation metrics and visualizations, addressing data storage concerns.
    - Led the Data Science for the Public Good (DSPG) student team in Summer 2020 of one graduate student and three undergraduate students: oversaw and contributed to project progress leading to the creation of an [R Shiny dashboard](#).
    - Sponsor: National Center for Science and Engineering Statistics (NCSES)
  - [Leveraging Department of Defense Data To Optimize Individual and Team Performance:](#)
    - My contributions: literature review, data visualization, R Shiny dashboard creation, write up of 20-year Army trends about Body Mass Index (BMI) and body fat percentage
    - Sponsor: The U.S. Army Research Institute for the Behavioral and Social Sciences
  - [Towards a National Community Learning Network to Advance Economic Mobility:](#)
    - My contributions: data discovery, wrangling, and exploration; literature review, R Shiny dashboard creation, creation of video [tutorials](#) and [data insight stories](#).
    - Sponsor: Bill & Melinda Gates Foundation
- Machine Learning Workshops led: Latent Dirichlet Allocation, February 2020

### Data Science Coordinator

Montgomery College, Germantown, MD; Dept. of Mathematics, Statistics, and Data Science

June 2018 – August 2020

- Role overview: oversee the data science program at MC, which includes a data science certificate and a general studies STEM A.A. with a focus on data science.
- Major Projects: creation of MC Data Science Advisory Board, creation of DATA student database, scheduling and staffing DATA classes including creating the part-time faculty ad, outreach and coordination with local industry/government and 4-year institutions for partnership opportunities, update curriculum
- Other Responsibilities: recruit faculty/staff to teach DATA courses, be a point of contact for program information, advertise, attend conferences/meetings, lead DATA discipline meetings

### Associate Professor

Montgomery College, Germantown, MD; Dept. of Mathematics, Statistics, and Data Science

January 2012 – August 2020

- Online Courses Developed: Differential Equations, Elementary Applied Calculus I, Calculus I, Elements of Statistics
- Courses Taught (face-to-face): Precalculus, Calculus II, Differential Equations, Elementary Applied Calculus I, Mathematics Prep, Scientific Research I, Discrete Structures, Introduction to Data Science, Capstone Experience in Data Science
- Courses Taught (online): Differential Equations, Intermediate Algebra, Elementary Applied Calculus I, Calculus I, Elements of Statistics
  - Software used for teaching classes: MATLAB, Blackboard, online homework systems (WebAssign, MathXL, MyMathLab, MyLabsPlus, MyOpenMath)
- Course Coordinator: Differential Equations (Fall 2012 – Spring 2017)
- Advisor for the Dept. of Mathematics, Statistics, and Data Science (Summer 2012 – August 2020)
  - Fall 2017 Project: Math Major Pathways - create optimized schedule pathways for math majors wishing to transfer from MC to four-year colleges, incorporate feedback from an advising task force
- Other Responsibilities: tutor math students, serve on college/campus-wide committees, curriculum development, attend college/campus/department meetings, professional development

### Business System Analyst

The Informatics Applications Group, Inc. (TIAG), Reston, VA

May 2016 - October 2016

- Customer: AFMOA - Air Force Medical Operations Agency, Frederick, MD
- Project: Collect, organize, and analyze data from the Military Treatment Facilities (MTFs) to evaluate operational difficulties and suggest recommendations to AFMOA.
- Duties: attend site visit with facilities personnel to gather information/data to help determine how to create the survey sent to MTFs, create a survey to collect data from the MTFs, monitor and report on completion of surveys, summarize qualitative data from survey results

### Instructor

Hood College, Frederick, MD; Dept. of Mathematics

August 2011 – December 2011

- Courses Developed: Computing for Applied Mathematics (a MATLAB programming course)
- Courses Taught: Topics in Problem Solving with Computational Tools, Computing for Applied Mathematics

### Adjunct Faculty - multiple institutions

August 2010 – May 2011

Hood College, Frederick, MD; Dept. of Mathematics

- Courses Taught: Topics in Problem Solving with Computational Tools

Frederick Community College, Frederick, MD; Dept. of Mathematics

- Courses Taught: Elementary Statistics

### Research Assistant

University of Maryland, College Park

August 2009 – June 2011: Dept. of Chemistry and Biochemistry

July 2011: Dept. of Computer Science

- Project: Implement molecular dynamics software to utilize a GPU
- Duties: install/use various GPU libraries; mixed language programming: Fortran, C, CUDA; parallelize an eigenvalue/eigenvector routine to utilize a GPU, write up results

## Other Experience

### Girl's Basketball Coach

Multiple head coach and assistant coach positions held

2004, 2007 - 2015

- Most recent: Urbana HS, Ijamsville, MD: Varsity Head Coach, May 2014 – August 2015
  - Maryland 3A State Finalist
- Most recent Duties:
  - On-court: run practices, coach games, scout opponents, player discipline
  - Organize, Advertise and Manage: summer basketball camp - 60 elementary and middle school aged campers, 20 staff
  - Budget: manage the team budget, order equipment and gear, inventory uniforms
  - Organize and Oversee: fall and summer leagues, fall and summer workouts, scrimmages, the banquet and other special events
  - Staffing: hire and release assistant coaches, and JV and Freshman team coaches
  - Communication:
    - email, phone, and face-to-face communication with players, parents of players, community members, the Athletic Director, the Assistant Principal in charge of sports, other coaches, and the local newspaper
    - Media interviews with the newspaper, local radio, and local tv stations

## Professional Qualifications

### Programming Languages

- Proficient in: Python, R\*, MATLAB, C, LaTeX
- Experience in: C++, CUDA\*, Java, Fortran\*, mixed language programming\*, OpenMP, SQL, BASH  
\*self-taught

### Operating Systems

- Proficient in: Linux (including command-line), Windows

## Presentations

- Linehan, K., Oh, E., Thurston, J., Shipp, S., Keller, S. (2020). "Introduction to the Use of Natural Language Processing and Machine Learning to Find Emerging Topics of Federal Funding of R&D". *Presented at the NCSES – BI SDAD Seminar*, November 9<sup>th</sup>, virtual.
- Linehan, K., Oh, E., Thurston, J., Shipp, S., Keller, S., Jankowski, J., Kindlon, A. (2020). "Analyzing Research and Development Trends Using Administrative Data". *Presented at the Federal Committee on Statistical Methodology (FCSM) Research and Policy Conference*, September 21<sup>st</sup>, virtual.
- Linehan, K. (2012). "Singular Value Decomposition and Cool Applications". *Presented at the MD-DC-VA Section Meeting of the Mathematical Association of America*, April, Stevenson University, Owings Mills, MD
- Linehan, K. (2011). "Matrices, the SVD, and Cool Applications". *Presented at the Pi Mu Epsilon/Hood College Mathematics Department Seminar Series*, October, Hood College, Frederick, MD.
- Linehan, K. (2009). "Information Retrieval Through Various Approximate Matrix Decompositions". *Presented at Graduate Research Interaction Day (GRID)*, April, University of Maryland, College Park, MD.

## **Professional Memberships**

- Mathematical Association of America (MAA)
  - Chair Elect for the MD-DC-VA section of the MAA, Spring 2020 - Present
  - MAA Committee on Articulation and Placement, Jan. 2018 - Jan. 2021
  - Program Chair for the MD-DC-VA section of the MAA, Fall 2014 – Spring 2016

*Last updated: February 2021*