benrbray@gatech.edu
(248) 210-5278

Benjamin R. Bray

benrbray.com/resume
github.com/benrbray

Education

Georgia Institute of Technology, Atlanta, GA *2017 – Present*

» Ph.D. Student, School of Computer Science. Working with **Dr. Jacob Abernethy**.
» *2017*: Explored connections between numerical analysis and accelerated optimization.
» *2018*: Focusing on continuous optimization & geometry, with applications to optimal transport.

University of Michigan, Ann Arbor, MI *2013 – 2017*

» Honors Applied Mathematics, B.S. (**3.7 GPA**) with minor in Computer Science
» Highlights: Probability theory, machine learning, numerical analysis, and Bayesian nonparametrics.

Work & Research

Software Engineering Intern, Microsoft (Seattle, WA) *Summer 2016*

» Built a multiplatform mobile app with Xamarin to display Windows telemetry insights to developers.

Data Science / Software Intern, Are You a Human (Detroit, MI) *Summer 2015*

» Designed & implemented new *humanness* features, improving bot classification accuracy by 4%.
» Prototyped random forest models for user fingerprinting and tracking based on device capabilities.

Research Assistant, advised by Dr. Peter McIsaac (German Languages & Literatures) *2013 – 2015*

» Text analysis of 19th century German periodicals with statistical **topic models**.
» Implemented **variational inference** for **Latent Dirichlet Allocation** from scratch in Python.
» Corrected noisy digital scans using a Hidden Markov Model over word fragments.

Teaching

Teaching Assistant, CS 4540, Advanced Algorithms *Fall 2018*

» Authored lecture notes, homework, and demonstrations for a flipped-classroom course.

Teaching Assistant, EECS 545/445, Machine Learning *W16, F17, W17*

» Redesigned curriculum with Prof. Jacob Abernethy, with emphasis on statistical methods.
» Taught a weekly discussion section of around twenty students.

Selected Projects & Involvement

Matey, a numerical linear algebra library for Python, written in C++. *Ongoing*

» Fast matrix operations, factorization, linear system solving, and eigenvalue computations from scratch.
» Built as a Python C-extension. Currently learning CUDA to parallelize existing algorithms.

Incompressible Fluid Simulation *Winter 2014*

» Interactive Java simulation of viscous, incompressible fluid with periodic boundary conditions.
» Solved numerically in the frequency domain, via the Fast Fourier Transform.

Technical Experience

	Advanced	*Proficient*	*Familiar*
Programming Languages	Python	HTML/CSS/JS, C#	C, C++, CUDA
Machine Learning	`numpy`, `gensim`	`matplotlib`, `scikit-learn`	
Miscellaneous		LaTeX, Git	AWS, Node, `flask`

Other Involvement

President, Michigan Student Artificial Intelligence Lab *2015-2017*

» Organized a weekly machine learning reading group for undergraduate & graduate students

(Modified: August 2018)