

Adrian Hagerty

Resumé

☎ (301) 807 5778
✉ ahagerty@andrew.cmu.edu
📁 math.cmu.edu/~ahagerty

Education

- 2013–2019 **Ph.D.**, *Carnegie Mellon University.*
(Expected) Mathematics
- 2009–2013 **BS**, *Carnegie Mellon University.*
Mathematics

Selected Coursework in Computing and Data Analysis

- 2019 **Scalable Machine Learning.**
- Developed practical knowledge of issues involving large data sets
 - Implemented of non-trivial algorithms using map-reduce infrastructure
 - Implemented learning algorithms that made use of parameter servers
- 2018 **Mathematics of Deep Neural Networks**, *Working Group in the Center for Non-linear Analysis.*
- Current working group of CMU professors, post-doctoral fellows and Ph.D. students
 - Goals include the development of the study of mathematical properties of DNNs
- 2017 **Machine Learning.**
- Implemented a suite of ML algorithms in Octave, including Naive Bayes, Regression, Decision Trees, PCA;
 - Final project: Multilabel classification of Cell Atlas data from CZ Biohub with sparse labels using pandas, scikit-learn, and tensorflow.
- 2017 **Discrete Differential Geometry.**
- Surveyed recent developments in digital geometry processing
 - Final project: Computing geodesics on surface meshes via heat flow as described in Crane & Wardetsky 2012
- 2016 **Variational and PDE techniques in Data Analysis.**
- Applications of PDEs and Calculus of Variations to clustering and classification tasks in image processing
 - Rigorous treatment of optimal transport and Wasserstein distance
 - Final project: Implementation of conformal Wasserstein metric of Lipman & Daubechies 2011 as a tool for unsupervised learning on surface meshes

Programming Languages and Computing Tools

- Python
- Javascript
- MATLAB / Octave
- Blender

Leadership Experience

- Summer 2017, 2018 **Summer Academy for Mathematics and Science, Instructor.**
- Organized and instructed a class of 30 High School students from underrepresented groups in STEM for college credit
 - Designed and prepared a suite of coursework, in class, at home, and online
 - Created interactive computer demonstrations to facilitate learning and understanding
- 2016–2018 **SIAM Student Chapter, President.**
- Put together bi-weekly seminars for graduate students
 - Organized weekly student working groups
 - Coached team of undergraduate Math and CS students for annual Math Contest in Modelling

Awards

- 2015 **PIRE Fellowship.**
- Received funding through NSF PIRE grant for research in pattern formation from energy minimization.
 - As part of conditions of funding, spent Summer 2015 at the University of Bonn in Bonn, Germany working with sponsor Stefan Müller
- 2017 **SIAM Student Chapter Certificate of Recognition.**
- Recognized for outstanding service and contributions to the CMU Student Chapter of SIAM
 - Awarded after writing and directing a short film promoting the CMU Student Chapter presented at the SIAM 2017 Annual Meeting

Publications

- 2018 **Relaxation of Functionals in the Space of Vector-Valued Functions of Bounded Hessian**, *A. Hagerty*, published in *Calculus of Variations and Partial Differential Equations*.
- 2018 **A Homogenization Result in the Gradient Theory of Phase Transitions**, *R. Cristoferi, I. Fonseca, A. Hagerty, C. Popovici*, to appear in *Interfaces and Free Boundaries*.

Other Research

- 2018 **Developable Surface Flow**, *A. Hagerty, K. Crane*.
Mathematical analysis and implementation of a developable surface flow as part of the Geometry Collective at CMU, involving mathematical research, coding in Javascript, Python, and use of 3D modelling software Blender