

Education

PhD, Computer Science, Brown University 2017 (Expected). Advisor: David H. Laidlaw.

Thesis: Visualization tool design for human-centered analysis constraints with applications in cancer genomics

ScM, Computer Science, Brown University 2014. Advisor: David H. Laidlaw.

BS, Computer Science, Religion minor, Tufts University 2012, *cum laude* with highest honors. Advisor: Remco Chang.

Skills

Languages: Javascript, Python, Java, R, C (proficient), C++ (historical proficiency)

Libraries: D3, NumPy, PyMongo, SciKit-Learn, Tornado (proficient), OpenGL (historical proficiency)

Design: Adobe Photoshop, Adobe Illustrator, paper prototyping, wireframing

Machine Learning and Statistics: linear regression, classification, clustering, experimental stats (e.g., X^2 , ANOVA)

Open Source Author or Contributor to: Colorgorical, d3-cam02, d3-jnd, MAGI, GD3, experimentr

Software Engineer Industry Experience

Google, Software Engineer Intern, Cambridge, USA, 2012

- Conceptualized and implemented a new visualization-based viral content exploration feature for Google+, which drew on UX (e.g., wireframing) and full-stack development skills (e.g., balancing functionality over the client vs. server)
- Collaborated with developers and designers to overcome front-end optimization hurdles and data center load constraints
- Programmed production-ready and test-driven C++ based BigTable jobs, Java-based asynchronous middleware, and Javascript-based front-end visualizations
- Regularly performed code reviews and applied Google's clean code policies

Charles River Analytics, Scientist/Software Engineer Intern, Cambridge, USA, 2011

- Devised a NASA TLX user study to examine cognitive resource allocation in emergency response management
- Designed and built a prototype in Java/Swing to allow a single pilot to control multiple unmanned vehicles

Research and Teaching Experience

Brown University, Graduate Researcher, Providence, USA, 2012 – Present

- Developed Colorgorical, a web-based color palette design tool built in C-Accelerated NumPy and D3 to help designers create custom categorical palettes on-the-fly that are comparable or better than ColorBrewer, Microsoft, and Tableau
- Guided the collaborative, full-stack development of a genomics visualization tool (MAGI) through qualitative evaluation and interaction log data mining techniques, and by making a new declarative genomics visualization library via D3 (GD3)
- Contributed to the full-stack development of MAGI, a cancer genomics visual analysis tool
- Explained complex problems and refined technical writing and speaking through 11 publications, through open source documentation, and through presentations at IEEE VIS, OpenVisConf, and local meet ups
- Established quantitative evaluation and analysis proficiency for in-lab and crowdsourced studies

Tufts University, Undergraduate Researcher and Teaching Assistant, Somerville, USA, 2009 – 2012

- Developed, graded, and taught course material as the computer graphics head teaching assistant (~20 students) and as a lab instructor for introduction to computer science and also for data structures (~300 students)
- Research in visualization aesthetics, data structures, software visualization, and protein rendering led to publication

Select Coursework (* Brown, † Tufts)

Interdisciplinary Scientific Visualization*, Data Science*, Topics in Computational Cancer Genomics*, Topics in Perception*, Topics in HCI*, Virtual Reality Design for Science*, Visual analytics†, Visualization†, Programming Languages†, Algorithms†, Machine Structure & Assembly Language†

Select Awards & Certifications

NSF Graduate Research Fellowship, 2012–16; Andries van Dam Graduate Fellowship, 2012–13; Sheridan Center Teaching Certificate, 2016; Runner Up Computing Research Association Outstanding Undergrad Research Award, 2011

Select Publications (5 of 11)

- A cancer genomics visualization task requirements analysis and design study of MAGI. Gramazio, Leiserson, Raphael, and Laidlaw. *Transactions on Visualization and Computer Graphics*. Under Review.
- An Analysis of Visual Analysis: Modeling the Interactive Visualization Tasks of Cancer Genomics Domain Experts. Gramazio, Huang, and Laidlaw. *Transactions on Visualization and Computer Graphics*. In Prep.
- Colorgical: Creating Discriminable and Preferable Color Palettes for Information Visualization. Gramazio, Laidlaw, and Schloss. *Transactions on Visualization and Computer Graphics (Proc. VIS '16)*. 2017. <http://vrl.cs.brown.edu/color>
- MAGI: visualization and collaborative annotation of genomic aberrations. Leiserson, Gramazio, Hu, Wu, Laidlaw, and Raphael. *Nature Methods*. 2015. <http://magi.brown.edu>
- The relation between visualization size, grouping, and user performance. Gramazio, Schloss, and Laidlaw. *Transactions on Visualization and Computer Graphics (Proc. VIS '14)*. 2014. <http://dx.doi.org/10.1109/TVCG.2014.2346983>