

Auston Sterling

Curriculum Vitae

Education

- 2013–Present **PhD Computer Science**, *University of North Carolina at Chapel Hill*.
(Ph.D. Defense in Jan 2019)
Working under Dr. Ming C. Lin in the area of sound synthesis and machine listening. Current work on using the recorded sound of an object being struck to estimate the material properties of that object.
Previously worked on a system for realistic and real-time multimodal (visual, haptic, audial) interaction with textured surfaces. Also worked with Dr. Jack Snoeyink on Reduce, a program to add missing hydrogen atoms to Protein DataBank files.
- 2010–2013 **B.S. Computer Science**, *Rensselaer Polytechnic Institute*, Troy, NY, *3.61 GPA*.
Advanced coursework in Computer Graphics, Game Architecture, and Computer Vision.
- 2006–2010 **High School**, *Webb School of California*, Claremont, CA.
Private college preparatory high school of 100 students per class, with strong emphasis on leadership and intellectual curiosity. AP courses included statistics, calculus, physics, modern European history, and English language and composition. Honors courses included Spanish, introduction to literature, chemistry, and biology.
- 2005–2009 **Summer Courses**, *Center for Talented Youth*, Los Angeles, CA.
3 week intensive course each summer for 5 years in topics including Probability and Game Theory, Electrical Engineering, Logic, Cryptology, and Cognitive Psychology.

Professional Experience

- Summer 2017 **Graduate Instructor**, *UNC*, Chapel Hill, NC.
Instructed a course, Introduction to Scientific Programming, focusing on dataset manipulation, statistical analysis, and visualization in Python and numpy. I had full responsibility for all lessons, assignments, exams, office hours, and grading.
- Summer 2016 **Engineering Intern**, *Aurora Flight Sciences*, Cambridge, MA.
Worked on machine learning techniques for using recorded aircraft flight data to identify phases and procedures in future flights. Collaborated with researchers at Carnegie Mellon University on reinforcement learning with shift-reduce parsers.
- Summers 2014, 2015 **Teaching Assistant**, *Center For Talented Youth*, Los Angeles, CA.
Assisted in teaching 12-14 year old students in intensive three-week courses. Assisted in teaching Data Structures in Summer 2014, and Cryptology for two sessions in Summer 2015. Primary duties to help students with assigned work and to lead daily evening sessions.

200 Barnes St #C2 – Carrboro, NC 27510

📞 (909) 518-2904 • ✉ austonst@cs.unc.edu • 🌐 cs.unc.edu/~austonst
👤 [austonst](#)

Fall 2013 **Graduate Teaching Assistant**, *UNC*, Chapel Hill, NC.

Worked with two other TAs to help instruct a Data Structures class of 140 students. Graded all assignments and exams according to TA-determined point distributions. Held frequent office hours for tutoring students. Explained and reviewed exam solutions in-class.

2012–2013 **Undergraduate Teaching Assistant**, *RPI*, Troy, NY.

Worked one on one with students in weekly graded labs to build understanding of concepts and provided occasional assistance on homework assignments. Around five hours per week commitment spent directly working with students.

Summer 2012 **Software Development Intern**, *Tanner EDA*, Monrovia, CA.

10 week summer internship with Tanner EDA, that develops software for the design, layout, and verification of integrated circuits. Worked to fix bugs with a port of their software to Linux through WINE. Gained experience with working on large code bases, primarily Tanner's software and WINE itself, and became very comfortable with revision control and build processes for large projects.

Class Preferences

Teaching Experience With:

- Introductory CS Courses
- Data Structures

Experience Through Research:

- Computer Graphics
- Machine learning
- Physically-Based Modeling
- Sound Simulation

References

Ming C. Lin

lin@cs.umd.edu

Sanjoy Baruah

baruah@wustl.edu

Dan Schneider

danielschneidermath@gmail.com

Refereed Publications

- 2019 Sterling, Auston, Nicholas Rewkowski, Roberta L. Klatzky, and Ming C. Lin. "Audio-Material Reconstruction for Virtualized Reality Using a Probabilistic Damping Model". In: *Conditionally accepted to IEEE VR 2019 and TVCG*.
- 2018 Sterling, Auston, Justin Wilson, Sam Lowe, and Ming C. Lin. "ISNN: Impact Sound Neural Network for Audio-Visual Object Classification". In: *The European Conference on Computer Vision (ECCV)*.
- 2017 Wilson, Justin, Auston Sterling, Nicholas Rewkowski, and Ming C. Lin. "Glass half full: sound synthesis for fluid-structure coupling using added mass operator". In: *The Visual Computer* 33.6, pp. 1039–1048. ISSN: 1432-2315. DOI: 10 . 1007 / s00371 - 017 - 1383 - 8. URL: <https://doi.org/10.1007/s00371-017-1383-8>.
- 2016 Sterling, Auston and Ming C. Lin. "Integrated multimodal interaction using texture representations". In: *Computers & Graphics* 55, pp. 118–129. ISSN: 0097-

200 Barnes St #C2 – Carrboro, NC 27510

📞 (909) 518-2904 • ✉ austonst@cs.unc.edu • 🌐 cs.unc.edu/~austonst
👤 [austonst](#)

8493. DOI: <http://dx.doi.org/10.1016/j.cag.2015.10.010>. URL: <http://www.sciencedirect.com/science/article/pii/S0097849315001715>.

Sterling, Auston and Ming C. Lin. "Interactive Modal Sound Synthesis Using Generalized Proportional Damping". In: *Proceedings of the 20th ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*. I3D '16. Redmond, Washington: ACM, pp. 79–86. ISBN: 978-1-4503-4043-4. DOI: 10.1145/2856400.2856419. URL: <http://doi.acm.org/10.1145/2856400.2856419>.

2015 Sterling, Auston and Ming C. Lin. "Integrated Multimodal Interaction Using Normal Maps". In: *Proceedings of the 41st Graphics Interface Conference*. GI '15. Halifax, Nova Scotia, Canada: Canadian Information Processing Society, pp. 33–40. ISBN: 978-0-9947868-0-7. URL: <http://dl.acm.org/citation.cfm?id=2788890.2788898>.

Other Experience

2017–Present National Registry and North Carolina certified EMT-B, WEMT

Fall 2011 Obtained Cisco Certified Network Associate certification as part of a networking course at RPI. Passed Cisco Certified Networking Professional Switching and Troubleshooting exams.

Various Individual programming projects, many available on Github. Recent examples include:

- C++/SDL implementation of David Sirlin's Chess 2
- Nutrition optimization using genetic algorithms
- Partial C++ implementation of the Bitmessage protocol
- C++ library to represent and easily construct MIDI files
- Procedural music generation by mutation and combination of motifs

2009–2010 Participated in a four man FIRST Tech Challenge team as part of a high school robotics course. Designed, built, and programmed a remote controlled robot to compete in a competition to launch balls into raised goals.

Activities and Hobbies

Backpacking Have completed thru-hikes of the 500-mile Colorado Trail, the 200-mile John Muir Trail, and the 2650-mile Pacific Crest Trail.

Distance Running Have completed three marathons with a PR of 2:56:36. In training for trail races and ultramarathons.

Speedcubing Solving Rubik's Cubes and similar puzzles as quickly as possible. Consistently below 20 seconds on a 3x3x3 cube, with personal record around 14 seconds. Also have experience with big cubes (up to 10x10x10), dodecahedrons, and one handed and blindfolded solving.

200 Barnes St #C2 – Carrboro, NC 27510

📞 (909) 518-2904 • ✉ austonst@cs.unc.edu • 🌐 cs.unc.edu/~austonst
👤 [austonst](#)