Timothy O'Brien

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Education

Stanford University   **Stanford, CA**
Ph.D., Computer-Based Music Theory and Acoustics   *Sep. 2014–present*
o Research focuses on deep learning applied to musical applications. Advised by Prof. Julius O. Smith, III. All coursework completed.
o Helped develop and teach *Music 421N: Deep Learning for Music and Audio*.
o Instructor for introductory computer music composition class; served as teaching assistant for six courses.

Stanford University   **Stanford, CA**
M.A., Music, Science and Technology – Center for Computer Research in Music and Acoustics   *Sep. 2012–Apr. 2014*
o GPA: 4.116
o Studies included digital signal processing, computer music composition, and human-computer interaction design.
o Research included complex system simulation for computer improvisation and real-time generative algorithmic composition.

University of Virginia   **Charlottesville, VA**
B.S., Physics   *Aug. 2002–May 2006*
Distinguished major in physics, concentration in computational physics, and minor in anthropology.
o Studies included C/C++ programming for analysis and simulation of physical systems.
o Senior thesis examined the dynamics of shear transformation zones in amorphous solids via numerical simulation.

Work Experience

Shazam   **Redwood City, CA**
Intern–R&D Engineering   *Jun. 2016–present*
o Trained neural net to intelligently reduce network and server load with minimal user impact, leading to significant cost savings and increased reliability.
o Developed unsupervised ML system, leveraging a massive set of proprietary data, to characterize any song (*e.g.* by genre).

Apple   **Cupertino, CA**
Intern–Audio Software Engineering   *May 2014–Aug. 2014*
o Developed an efficient solution to a user-facing audio interaction, leveraging the expertise and buy-in of multiple teams, which was deployed to millions of devices.

Sennheiser Research   **San Francisco, CA**
Intern–Audio DSP Engineering   *Jun. 2013–Sep. 2013*
o Developed object-oriented AutoMixer in Matlab, optimizing efficiency, agility, and ease of use.
o Researched DSP concepts, mainly compressed sensing; work included numerous Matlab experiments and simulations.
o Contributed to proprietary Matlab codebase, adhering to coding standards and guidelines.

J.P. Morgan Chase   **New York, NY**
Equity Research Assistant   *Sep. 2006–Aug. 2012*
o Partnered with department management to analyze expenses and make recommendations for expense savings; led training on new automated and web-based systems to achieve significant cost savings during the financial crisis.
o Identified and gathered key metrics for research publications and to fulfill client requests.

Additional

o Avid guitar player and composer.
o Lead guitarist for two alternative metal bands that performed original works at venues throughout New York City.

Skills

Programming: Python, C, C++, Matlab, *etc.*   **DSP**: Audacity, Ardour, Faust, SuperCollider, PD, ChucK
ML Libraries: Keras, TensorFlow, PyTorch   **Misc.**: Linux, Bash, Vim, Git