

Chris Donahue

Department of Music
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Current position

PHD Candidate, Department of Music, University of California San Diego

Areas of specialization

Music generation • Music information retrieval • Audio signal processing • Deep learning

Education

- 2016- PHD Candidate, Music, University of California San Diego
Co-advised by [Miller Puckette](#) (music) and [Julian McAuley](#) (computer science)
Thesis: *Enabling gestural control in interactive music applications with machine learning* (in progress)
- 2014-2016 MA, Music, University of California San Diego
Advised by [Miller Puckette](#)
Thesis: *Extensions to convolution for generalized cross-synthesis*
- 2010-2013 BS with high honors, Computer Science, University of Texas at Austin
Co-advised by [Peter Stone](#) (computer science) and [Russell Pinkston](#) (music)
Thesis: *Applications of genetic programming to digital audio synthesis*

Selected publications

- 2019 Donahue, C., McAuley, J. and Puckette, M. (2019), "Adversarial audio synthesis," *ICLR*
- 2019 Donahue, C., Simon, I. and Dieleman, S. (2019), "Piano Genie," *ACM IUI*
- 2019 Engel, J., Agrawal, K., Chen, S., Gulrajani, I., Donahue, C., Roberts, A. (2019), "GANSynth: Adversarial neural audio synthesis," *ICLR*

- 2018 Donahue, C., McAuley, J. and Puckette, M. (2018), “The NES Music Database: A multi-instrumental dataset with expressive performance attributes,” *ISMIR*
- 2018 Donahue, C., Lipton, Z., Balsubramani, A. and McAuley, J. (2018), “Semantically decomposing the latent space of generative adversarial networks,” *ICLR*
- 2018 Donahue, C., Li, B. and Prabhavalkar, R. (2018), “Exploring speech enhancement with generative adversarial networks for robust speech recognition,” *ICASSP*
- 2017 Donahue, C., Lipton, Z. and McAuley, J. (2017), “Dance Dance Convolution,” *ICML*
- 2016 Donahue, C., Erbe, T. and Puckette, M. (2016), “Extended convolution techniques for cross-synthesis,” *ICMC*
- 2013 Donahue, C. (2013), “Applications of genetic programming to digital audio synthesis,” *UT honors thesis*

Professional experience

- 2018 INTERN, Google (3 months)
I worked with with [Ian Simon](#) from Google Brain and [Sander Dieleman](#) from DeepMind. We built Piano Genie, a generative instrument which allows non-musicians to improvise on the piano.
- 2017 INTERN, Google (3 months)
I worked with [Bo Li](#) and [Rohit Prabhavalkar](#) on Google’s acoustic modeling for speech team. Our work on speech enhancement using generative adversarial networks led to a submission to *ICASSP*.
- 2016 INTERN, Google (3 months)
I worked on Google’s crawling team to develop techniques for semantic clustering of URLs.
- 2015 INTERN, Google (3 months)
I worked with [Nicolas Boulanger-Lewandowski](#) on the Google Play Music team to develop auto-tagging models for music using convolutional neural networks.
- 2011-2014 MENTOR, UT Freshman Research Initiative (3 years, part time)
I was a mentor for UT’s Freshman Research Initiative program in the Computational Intelligence in Game Design lab under [Joel Lehman](#) and [Risto Mikkulainen](#).
- 2014 INTERN, Famigo (3 months)
I developed a web-based education platform allowing teachers to build interactive lesson plans.
- 2013 INTERN, DocbookMD (3 months)
I built a web portal allowing medical paging companies to contact on-call physicians.

Honors & awards

2018	NVIDIA hardware grant recipient (\$3000 value)
2018	Unity Global Graduate Fellowship recipient (\$30000)
2018	UCSD Chancellor's Research Excellence Scholarships recipient (\$25000)
2018	Support award for the 19th International Society for Music Information Retrieval Conference (\$500)
2018	Support award for the 7th International Conference on Learning Representations (\$500)
2018	HPC @ UC Allocation for machine learning research (20000 GPU hours)
2017	Tensorflow named contributor (versions 1.4 and 1.5)
2017	Sponsored Scholar award at the 34th International Conference on Machine Learning (\$1800)
2017	NVIDIA hardware grant recipient (\$1500 value)
2016	XSEDE Startup Allocation for machine learning research (6250 GPU hours)
2015	UCSD Academic Senate COR Grant for graduate research (\$12000)
2013	Graduated with high honors from UT Austin
2011	Microsoft Summer Research Fellowship (\$1250)
2011	Chevron University of Texas Computer Science Scholarship (\$2000)

Media coverage

BUSINESS INSIDER *[A Google intern helped build an AI tool inspired by 'Guitar Hero' to let rookies play piano](#)*

THE VERGE *[Google's AI-powered Piano Genie lets anyone improvise perfectly by bashing buttons](#)*

ENGADGET *[Google's Piano Genie lets anyone improvise classical music](#)*

MIT TECH REVIEW *[Machine-Learning Algorithm Watches Dance Dance Revolution, Then Creates Dances of Its Own](#)*

THE VERGE *[Scientists have taught a neural network to choreograph Dance Dance Revolution levels](#)*

THE REGISTER *[Yet another job menaced by AI! Uh, wait, it says here... Dance Dance Revolution designers](#)*