Christopher **ICK**

New York University 2017 | BS Physics
New York University 2024 | PhD Data Science

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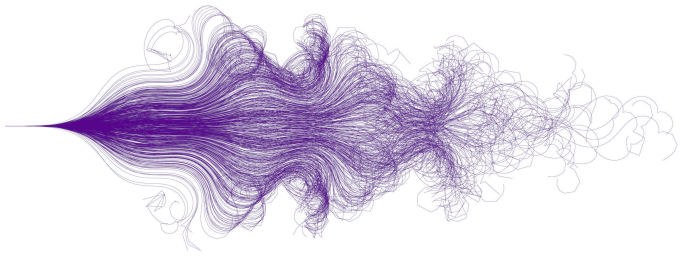

Who am I?	I am a 5th Year PhD student at NYU's Center for Data Science in the Music and Audio Research Lab
What do I do?	I study signals, sound, acoustics, and music through the lens of physics, signal processing, and deep learning
Current Projects?	I'm developing 3D audio generation methods for training sound event localization and detection models

Education and Honors

2019-2024 (Anticipated) — **Doctor of Philosophy**, Data Science, New York University
- Advised by Prof. Brian McFee
- Coursework in Recommender Systems, Time Series Analysis, Music Information Retrieval
- Urban Scholars Research Fellow (2020)

2018-2019 (Transferred to PhD Program) — **Master of Science**, Data Science, New York University
- DeepMind Fellowship (2018)

2013-2017 — **Bachelor of Science**, Physics, New York University
- Minors : Computer Science/ Math
- Graduated with honors
- Athletic Honor Roll (2013-2014)
- Deans List (2013-2014)
- Sigma Pi Sigma Honors Society (Inducted 2015)
- Dean's Undergraduate Research Grant (Summer 2015, Winter, Spring, Summer, and Fall 2016)

Publications

- **C. Ick**, B. McFee, "Leveraging Geometrical Acoustic Simulations of Spatial Room Impulse Responses for Improved Sound Event Detection and Localization, " *DCASE Workshop*, 2023
- **C. Ick**, A. Mehrabi, and W. Jin, "Blind Acoustic Room Parameter Estimation Using Phase Features, " *IEEE ICASSP*, 2023
- M. Hübner, D. Huppenkothen, P. Lasky, A. Inglis, **C. Ick**, and D. Hogg, "Searching for quasi-periodic oscillations in astrophysical transients using Gaussian processes," *The Astrophysical Journal*, 2022
- L. Bondi*, G. Chuang*, **C. Ick***, A. Dave*, et. al.; "Acoustic Imaging aboard The International Space Station (ISS) : Challenges and preliminary results," *IEEE ICASSP*, 2022 *Equal Contribution
- **C. Ick** and B. McFee, "Sound Event Detection in Urban Audio with Single and Multi-Rate PCEN," *IEEE ICASSP*, 2021
- **C. Ick** and V. Lostanlen, "Learning a Lie Algebra from Unlabeled Data Pairs," *Deepmath Conference* (Abstract/Poster), 2020

Ongoing Work

Spatial RIR Interpolation	Learning continuous multichannel RIR representations from limited measurements
Spatial Audio Generation	(*In Review*) Software library for generating annotated spatial audio with real/simualted SRIRs
Rap Transcription	Writing featurization/sampling algorithms and annotation interface for rap music

Figure source : Cook, Matthew "It Takes Two Neurons to Ride a Bicycle", Demo at NIPS 2004

Professional Experience

August 2022 – June 2022 | Sonos, Boston, MA
Advanced Technology Intern
Advisors : Wenyu Jin, Adib Mehrabi
Developed algorithms and datasets for blind room parameter estimation w/ CNNs for use in smart speaker technologies (*Results published in ICASSP 2023*)

August 2021 – May 2021 | Robert Bosch LLC, Pittsburgh, PA
Audio AI Intern
Advisors : Luca Bondi, Samarjit Das
Designed dynamical acoustic simulations for replicating audio imaging experiments onboard the international space station (*Results published in ICASSP 2022*)

August 2019 – May 2019 | Amazon Music, San Francisco, CA
Applied Scientist Intern
Advisors : Emile Richard, Katherine Ellis
Developed algorithms for cover song detection in the Amazon Music catalog, improving recall by over 60%

September 2018 – May 2017 | NYU Physics Department, New York, NY
Junior Research Associate
Advisors : David Hogg, Kyle Cranmer
Developed Gaussian process models for estimating solar flare oscillations and low-count dark matter detection experiments (Results published in *Astrophysics Journal 2022*)

May 2017 – December 2014 | Undergraduate Researcher, Kent Lab of Mesoscopic Magnetism, New York, NY
Undergraduate Researcher
Developed and optimizing a simulation of macrospin-orbit dynamics via numerical ODE solutions, imaged magnetic skyrmions using magnetic force microscopy

Teaching Experience

August 2023 – May 2023 | NYU Music and Research Lab, Brooklyn, NY
REU Mentor
Mentored a visiting undergraduate in developing, researching, and presenting a research project on spatial audio annotation and visualization
ARISE Mentor
Mentored a visiting high-school student in introductory python, 3D data processing, and visualization

December 2019 – September 2019 | NYU Center for Data Science, New York, NY
Course Assistant - Data Science
- **Data Science for Everyone** (Fall 2019)

Present – September 2016 | NYU Physics Dept., New York, NY
Teaching Assistant - Physics
- **How Things Work** (Fall 2023)
- **Intro to Experimental Physics II** (Spring 2019)
- **Quarks to Cosmos** (Fall 2018)
- **Advanced Experimental Physics** (Fall 2016, Spring 2017, Fall 2017, Spring 2018)

May 2017 – September 2014 | NYU Physics Department, New York, NY
Adjunct Undergraduate Instructor
Taught groups of students entry-level kinematics, electricity and magnetism, optics, thermodynamics, fluid dynamics, and other physics subjects

Interests

Artistic : Film photography, Synthesizers, Classical and Jazz piano
Exercise : Road Cycling/Cyclocross, Rock Climbing, Snowboarding, Scuba Diving
Technology : Custom mechanical keyboards, Arduino/Rasberry Pi programming, Super Smash Bros. Melee