

Jake Araujo-Simon

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Education

- McGill University** – Montréal, Canada 2020-2023
Master of Art, Music Technology
- University of Chicago** – Chicago, Illinois 2012-2016
Bachelor of Arts, Interdisciplinary Studies in Music, Math, Physics and Computer Science
- Stuyvesant High School** – New York, New York 2008-2012

Experience

- McGill Sound Processing and Control Laboratory (SPCL)** — *November 2020 - 2023*
- Conducted research on graph and topological signal processing and their applications to audio
 - Participated in weekly meetings on topics ranging from wave field synthesis to geometric deep learning to time-frequency analysis
- Recurse Center** — *April 2020 - July 2020*
- Built a library in Haskell for 3D visualization of time-evolving geometric simplicial complexes
 - Co-organized study groups in discrete differential geometry and applied category theory
- Quivr Inc.**, Founder — *June 2017 - September 2019*
- Designed and prototyped a cyber-physical acoustic medium and human-computer musical interface
 - Implemented parallel numerical simulation of the acoustic wave equation which ran at near-audio rate on the cloud
 - Filed associated patent application

Publications

Compositional Nonlinear Audio Signal Processing with Volterra Series, Master's thesis, 2023

Patents

US 17/803,852 - *System and Method for Generation and Evolution of Coupled Hybrid Acoustic Media* (continuation application, pending 2022-)

PCT/US2019/02332 - *Cyber-Physical System and Vibratory Medium for Signal and Sound Field Processing and Design Using Dynamical Surfaces* (abandoned 2022)

Skills

Programming languages: Haskell, C/C++, Max/MSP, Erlang/Elixir
Frameworks and tools: OpenMP, OpenGL

Seminars attended

- Programming with Categories, IAP course at MIT, audited January 2020
- *Seven Sketches in Compositionality*, " January 2019

- Category theory seminar, CUNY Graduate Center, attended 2018-2020
- Spatial Audio Summer Seminar and Workshop at RPI, July 2017/18

Languages

French (*working proficiency*)

English (*native language*)