

Takahiko Tsuchiya

PhD in Music Technology <https://takaka.dev> (857) 204-3346 takahiko@gatech.edu

Expertise

Audio signal processing, auditory display, and data analytics
Multimedia web application (front / backend) and tools development
Native / mobile environment audio and interactive application development

Skills

Proficient programming languages: C++ (w/ teaching experience), JavaScript / TypeScript
Proficient domain-specific languages and frameworks: Max/MSP (w/ teaching experience), Csound, WebAudio, WebAssembly, React, Redux, Webpack, AngularJS, SQL, JUCE, D3
Used extensively in past projects: Clojure(Script), Java, R, MATLAB, Objective C, AWS (MTurk)
Audio production: Contemporary music theories (jazz / electroacoustic); Production software such as Ableton Live and ProTools; Live / studio recording and mixing workflow
Communication: English, Japanese

Education

Georgia Institute of Technology, Atlanta, Georgia (Aug. 2013 – May 2021)
M.S. & Ph.D. in Music Technology; Minor in Data Analytics and Coding (GPA 3.95)
Course Works: Fourier Analysis, Data Compression, Digital Signal Processing, Data Analytics, Artificial Intelligence, Music Information Retrieval, Music Perception & Cognition, Acoustics
Teaching Practicum: Audio Software Engineering (C++), Interactive Music (Max/MSP)

Berklee College of Music, Boston, Massachusetts (Jan. 2009 – May 2012)
B.F.A. in Music focused on Music Technology (GPA 3.84)

International Christian University, Tokyo, Japan (Apr. 2004 – Mar. 2008)
B.A. in Humanities with a focus on Ethno-musicology

Work and Research Experience

Georgia Tech Center for Music Technology, Atlanta, GA (Aug. 2013 – present)
Full-stack Developer: Front/backend development of EarSketch, a web platform for computer-science and music education with 2 mil users / 4k daily login. My contributions as the frontend lead includes the rearchitecting and migration of the codebase (150k LoC) from Require / AngularJS to Webpack / React / Redux / TypeScript.

The Concord Consortium, Emeryville, CA (June 2018 – December 2018)
NSF-funded Developer Intern: Created a suite of auditory-display plugins for a web data-science platform (CODAP). Also contributed in enhancing its math formula engine, map widget, etc.

2016 Web Audio Conference, Atlanta, GA (September 2015 – April 2016)
Program Committee: Served as a poster and demo chair.

Second Sense Audio Technology Co., Ltd., Beijing, China (June 2015 - September 2015)
Developer / consultant: Provided the core algorithms for the software synthesizer Wiggle VST.

GTRI Configurable Computing & Embedded Systems Lab, Atlanta, GA (May 2014 – Aug. 2014)
Intern / RA: Developed audio-visual web dashboard for networked sensors deployed in Decatur, GA. Premiered sonification piece with Atlanta Symphony Orchestra musicians in public concert.

Boulanger Labs, Boston, MA (Dec. 2012 – Aug. 2013)

Lead audio developer: Designed 20+ instruments (in Csound) and implemented interactive audio functions (in Objective C / CoreAudio) of the csSpectral app for iOS.

Audivation Inc., Boston, MA (Aug. 2011 – May 2013)

Lead developer: Developed and maintained musical plugins for the CsoundForLive collection.

Assistive Music Technology Lab for Blind Musicians, Boston, MA (Aug. 2011-Apr. 2012)

Developer: Educational software development for blind musicians.

Selected Publications

Composing and Decomposing Electroacoustic Sonifications. *PhD Thesis (2021)*. Atlanta, Georgia.

A study of Exploratory Analysis in Melodic Sonification with Structural and Durational Time Scales. *International Conference on Auditory Display 2018*. Houghton, Michigan.

Spectral Parameter Encoding: Towards a Framework for Functional-Aesthetic Sonification. *International Conference on Auditory Display 2017*. State College, Pennsylvania.

Encoding Data into Sound and Music: A Live-Coding Approach. *International Conference on Live Coding 2016*. Hamilton, Canada.

Adapting DAW-Driven Musical Language to Live Coding: A Case Study in EarSketch. *International Conference on Live Coding 2016*. Hamilton, Canada.

Data-Driven Live Coding with DataToMusic API. *Web Audio Conference 2016*. Atlanta, Georgia.

Multi-Modal Web-Based Dashboards for Geo-Located Real-Time Monitoring. *Web Audio Conference 2016*. Atlanta, Georgia.

DataToMusic API: Data-Agnostic Aesthetic Sonification Framework. *Sounds, Images and Data Conference 2015*, New York.

Data-to-Music API: Real-Time Data-Agnostic Sonification with Musical Structure Models. *International Conference on Auditory Display 2015*. Graz, Styria, Austria.

Using massMobile, a Flexible, Scalable, Rapid prototyping audience participation framework, in large-scale live musical performances. *Digital Creativity*. 26, 3-4 (Oct. 2015).

Awards Received

Berklee College of Music - Roland Scholarship (2010 and 2011)

JYDA Creative Ideas Contest - 1st place: Funded my Japan-US exchange program (1999)