

# Takahiko Tsuchiya

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

## Expertise

---

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

## Skills

---

**Proficient programming languages:** JavaScript / TypeScript, C++ (w/ teaching experience)  
**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 web apps (EarSketch, MassMobile). The contributions include the migration of the codebase (150k LoC) from Require/AngularJS to Webpack/React.

**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 - July 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)