Takahiko Tsuchiya

PhD in Music Technology	hello@takaka.dev	(857) 204-3346	Portfolio: https://takaka.dev

Expertise

Dynamic audio-visual web application (front / backend) and tools development
UX design for exploratory data analysis and audio signal processing
Rapid prototyping of interactive applications for native / mobile environments

Skills

Proficient programming languages: JavaScript / TypeScript, C / C++(17)
Familiar languages: Clojure, Rust, Python, Java, Swift, Objective C, MATLAB, R
Proficient domain-specific languages and frameworks: Max/MSP, Csound, WebAudio, JUCE, React, Redux, Webpack, AngularJS, D3, SQL, Git, Bash, AWS, Arduino
Open-Source Projects: Data-to-Music API, Sonar.js
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

Samsung Research America, Inc., Mountain View, CA (January 2022 - Present)
Staff Engineer I, Software: Responsible for the feature development of Bixby Studio with the primary focus of improving the user experience of Bixby Capsule creators.

MedRhythms, Inc., Portland, ME (October 2021 – December 2021)
Engineering Contract: Contributed to the development of audio streaming, annotating, and playback systems with audio content analyses.

Georgia Tech Center for Music Technology, Atlanta, GA (Aug. 2013 – May 2021)
Full-stack Developer: Worked primarily as the frontend lead for EarSketch, a web platform for computer-science and music education. My contributions include rearchitecting the 150k LoC codebase from AngularJS to React / Redux stack and implementing collaborative editing.

The Concord Consortium, Emeryville, CA (June 2018 – December 2018)
NSF-funded Developer Intern: Created a suite of audio-visual 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, accommodating networked tech demos.

GTRI Configurable Computing & Embedded Systems Lab, ATL, GA (May 2014 – March 2015)
Intern / RA: Developed audio-visual web dashboard and API for networked sensors (FPGA, Python, JavaScript) deployed in Decatur, GA. Tools I developed are now featured as a course resource at Georgia Tech. With the dashboard / API, we also premiered a data-driven generative music with Atlanta Symphony Orchestra musicians in a public concert.

Boulanger Labs, Boston, MA (Dec. 2012 – Aug. 2013)
Lead audio developer: Authored 20+ audio-effect modules (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 (Max/MSP, C) for blind musicians.

Selected Publications

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

Collaborative Coding with Music: Two Case Studies with EarSketch. *Web Audio Conference* 2018, Berlin, Germany.

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.

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

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

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

Awards Received

Berklee College of Music - Roland Scholarship (2010 and 2011)
JYDA Creative Ideas Contest - 1st place: Funded my Japan-US exchange program (1999)