

## Takahiko Tsuchiya

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Ph.D. candidate in Music Technology

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### Expertise

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

### Education

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**Georgia Institute of Technology**, Atlanta, Georgia (Aug. 2013 – May 2021)  
M.S. and Ph.D. in Music Technology; Minor in Data Analytics and Coding (GPA 3.95)

**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

### Selected Experience

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**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 RequireJS/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.

## Skills

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**Communication:** English, Japanese

**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

**Open-source projects:** <https://github.com/GTCMT/DataToMusicAPI>

## Selected Publications

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Tsuchiya, T., and Jason Freeman. A study of Exploratory Analysis in Melodic Sonification with Structural and Durational Time Scales, *Proceedings of the 24th International Conference on Auditory Display (ICAD 2018)*. Houghton, Michigan.

Tsuchiya, T. and Jason Freeman. Spectral Parameter Encoding: Towards a Framework for Functional-Aesthetic Sonification, *Proceedings of the 23rd International Conference on Auditory Display (ICAD 2017)*. State College, Pennsylvania.

Tsuchiya, T. and Jason Freeman. Encoding Data into Sound and Music: A Live-Coding Approach, *Proceedings of the International Live Coding Conference 2016*. Hamilton, Canada.

Tsuchiya, T., et al. Adapting DAW-Driven Musical Language to Live Coding: A Case Study in EarSketch, *Proceedings of the International Live Coding Conference 2016*. Hamilton, Canada.

Tsuchiya, T., et al. Data-Driven Live Coding with DataToMusic API, *Proceedings of the Web Audio Conference 2016*. Atlanta, Georgia.

Winters, M., et al. Multi-Modal Web-Based Dashboards for Geo-Located Real-Time Monitoring, *Proceedings of the Web Audio Conference 2016*. Atlanta, Georgia.

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

Tsuchiya, T., et al. Data-to-Music API: Real-Time Data-Agnostic Sonification with Musical Structure Models. *Proceedings of the 21st International Conference on Auditory Display (ICAD 2015)*. Graz, Styria, Austria.

Freeman, J., et al. 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

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

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