

# Jennifer Hsu

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## Education

### Doctor of Philosophy in Computer Music

University of California, San Diego  
La Jolla, CA

*September 2013 – (in progress)*

### Master of Arts in Music, Science, and Technology

Stanford University  
Stanford, CA

*September 2011 – June 2013*

### Bachelor of Arts in Cognitive Science

### Bachelor of Arts in Computer Science

University of California, Berkeley  
Berkeley, CA

*August 2007 – May 2011*

## Research interests

Statistical analysis of rhythm and structure in musical audio  
Percussion synthesis and transient modeling  
Building tools that facilitate music creation  
Digital audio signal processing, digital audio effects

## Employment

### Research Assistant

Immersive Lab Project, UC San Diego, CA

*Supervisor: Katharina Rosenberger*

Troubleshoot issues involving panoramic video, spatial audio, and touch interaction in the Immersive Lab media space

Assist students with software programming problems in Pd and Max/MSP

*September 2014 – June 2015*

### Research Intern

Gracenote, Media Technology Lab, Emeryville, CA

*Supervisor: Gregoire Tronel, Phillip Popp*

Develop a downbeat estimation algorithm

*June 2015 – September 2015*

### Research Assistant

Center for Research and Learning (CREL), UC San Diego, CA

*Supervisor: Shlomo Dubnov*

Develop algorithms to synthesize music from semantic emotional descriptors

Develop algorithms for identification of repeated musical pattern

Research in guided and structured musical improvisation

*September 2014 – June 2015*

### Research Intern

*July 2014 – September 2014*

Jawbone, Algorithms Group, San Francisco, CA

*Supervisor: Stuart Crawford*

Research musical emotions in relation to acoustic features, skin conductance, and facial expressions  
Design and implement an experiment to predict emotions experienced during music listening  
Apply machine learning algorithms to experimental data

### **Research Intern**

*June 2012 – August 2013*

Dolby Laboratories, Advanced Technology Group, San Francisco, CA

*Supervisor: Poppy Crum*

Design and implement subjective tests for audio and video assessment  
Analyze auditory perceptual test results to improve post-processing  
Obtain quantitative measures from subjective listening tests to improve spatialization algorithms  
Design and implement tools for internal perceptual testing administrators

### **Research Assistant**

*January 2010 – May 2011*

Affective Cognitive Neuroscience Laboratory, UC Berkeley, CA

*Supervisor: Sonia Bishop*

Prescreen participants for behavioral functional magnetic resonance imaging (fMRI) studies  
Assist in design of experimental stimuli  
Write programs to extract relevant information from experimental results

## **Teaching experience**

**Teaching Assistant**, University of California, San Diego, CA

Audio Production: Mixing and Editing (*in progress*)

Audio and MIDI Studio Techniques III

Audio and MIDI Studio Techniques II

Audio and MIDI Studio Techniques I

*January 2015 – March 2015*

*April 2014 – June 2014*

*January 2014 – March 2014*

*September 2013 – December 2013*

## **Publications**

Cheng-i Wang, Jennifer Hsu, and Shlomo Dubnov, “Music pattern discovery with Variable Markov Oracle: A Unified Approach to Symbolic and Audio Representations,” in *Proceedings of the 16<sup>th</sup> International Society for Music Information Retrieval Conference*, Málaga, Spain, October 2015, pp. 176-182.

Jennifer Hsu and Tamara Smyth, “Specifying sounding frequency of a voice model during live interactive saxophone performance,” in *Proceedings of the 41<sup>st</sup> International Computer Music Conference*, Denton, Texas, September/October 2015, pp. 182-185.

## **Selected projects**

**sequencer:** an audio/visual/touch-interaction installation for the Immersive Lab ([immersivelab.zhdk.ch](http://immersivelab.zhdk.ch)) presented at swissnex San Francisco Immersive Lab at Gray Area (November/December 2015)

*Supervisor: Katharina Rosenberger*

*September 2015 – December 2015*

**MB Delay:** an FFT-based multiband delay VST plug-in

*Supervisor: Tom Erbe*

*April 2014 – June 2014*

**Vowel Morph:** a physical model of the vocal tract and glottal folds with the ability to morph between vowels in PureData (Pd)

*Supervisor: Tamara Smyth*

*April 2014 – June 2014*

<b>Perceptually-based concatenative synthesis using source and target audio</b> <i>Supervisor: Shlomo Dubnov</i>	<i>September 2013 – December 2013</i>
<b>Granny Grains: a granular synthesis VST plug-in</b> <i>Supervisor: Tom Erbe</i>	<i>September 2013 – December 2013</i>
<b>Live laptop performance system</b> <i>Supervisor: Chris Chafe</i>	<i>January 2013 – April 2013</i>
<b>Reverse reverberation VST plug-in in 'real-time'</b> <i>Supervisor: Jonathan Abel</i>	<i>September 2012 – December 2012</i>
<b>Audio morphing in the spectral domain</b> <i>Supervisor: Julius O. Smith</i>	<i>April 2012 – June 2012</i>
<b>hearHere: an iPhone app that lets you listen to the world around you as music</b> <i>Supervisor: Ge Wang</i>	<i>January 2012 – April 2012</i>
<b>Auditory filter banks</b> <i>Supervisor: Julius O. Smith</i>	<i>January 2012 – April 2012</i>

## Volunteer activities

<b>Paper abstracts reviewer</b> Intercultural Music Conference and Conference 2016	<i>December 2015</i>
<b>Organization committee member</b> <b>Performer</b> CCRMA Modulations, an annual presentation of live electronic music, dance, and interactive sound installations by students, professors, and guests <i>ccrma.stanford.edu/events/modulations</i> Aid in event decisions including venue, marketing, choosing performers, planning set times Present a live electronic music set	<i>January 2013 – April 2013</i>
<b>Music Mixer</b> for various Northern California hip-hop dance teams including: Main Stacks: <i>mainstacksdance.wordpress.com</i> Senior Stacks SF Funksters: <i>funkanometry.org</i>	<i>September 2008 – present</i>

## Software skills

Programming: C/C++, Matlab, Python, Objective-C/iOS  
Audio: Ableton Live, Pd, ChuckK,

## References

Available upon request