JENNIFER HSU

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RESEARCH INTERESTS

- Design and implementation of music production and composition applications
- Analysis and synthesis of percussive sounds
- Statistical analysis and transformation of rhythmic patterns in musical audio
- Digital audio signal processing and digital audio effects

EDUCATION

Doctor of Philosophy in Computer Music
University of California, San Diego
La Jolla, CA // Sept 2013 - present

Master of Arts in Music, Science, and Technology
Stanford University
Stanford, CA // Sept 2011 - June 2013

Bachelor of Arts in Computer Science and Bachelor of Arts in Cognitive Science
University of California, Berkeley
Berkeley, CA // Aug 2007 - May 2011

EMPLOYMENT

Audio DSP Engineering Fellow
Goodhertz, Inc.
Pasadena, CA // June 2018 - Sept 2018
Supervisor: Devin Kerr
- Collaborated with the DSP team to develop and implement a digital reverb audio plugin.
- Scripted and recorded an instructional video demonstrating how to set up an external side chain for 3rd party plugins in Ableton Live.

Graduate Student Researcher
UC San Diego, Department of Music
La Jolla, CA // Jan 2017 - March 2018
Supervisor: Tamara Smyth
Researched techniques to implement a real-time, parametric 2-D mesh for use in an interactive percussion instrument.

EMPLOYMENT

Research Intern
Ossic, Engineering Group
San Diego, CA // June - Sept 2016 // June - Sept 2017
Supervisor: Joy Lyons
Designed algorithms to personalize head-related transfer functions (HRTFs) for spatial audio.

Research Assistant
Center for Research and Learning (CREL), UC San Diego
La Jolla, CA // Sept 2014 - June 2015 // Sept - Dec 2016
Supervisor: Shlomo Dubnov
- Developed algorithms to synthesize music from semantic emotional descriptors.
- Explored techniques to identify repeated musical patterns.
- Researched guided and structured musical improvisation.

Research Intern
Gracenote, Media Technology Lab
Emeryville, CA // June - Sept 2015
Supervisors: Gregoire Tronel and Phillip Popp
Created a downbeat estimation algorithm using machine learning techniques.

Research Intern
Jawbone, Algorithms Group
San Francisco, CA // July - Sept 2014
Supervisor: Stuart Crawford
- Designed and implemented a listening experiment to predict emotions experienced during music listening using acoustic features, skin conductance, and facial expressions.
- Applied statistical analysis to experimental data.

Research Intern
Dolby Laboratories, Advanced Technology Group
San Francisco, CA // June 2012 - August 2013
Supervisor: Poppy Crum
- Designed and implemented subjective listening tests.
- Researched statistical analysis methods to obtain quantitative measures from subjective listening tests.

TEACHING EXPERIENCE

Associate-In Music (Course Instructor)
UC San Diego, Department of Music
La Jolla, CA // Fall 2018
Music 173: Electronic Music Production and Composition

Teaching Assistant
UC San Diego, Department of Music
La Jolla, CA
- Music 173: Electronic Music Production and Composition
  Winter 2016 // Winter 2017 // Spring 2018
- Music 175: Musical Psychoacoustics
  Spring 2016 // Spring 2018
- Music 174ABC: Audio/MIDI Studio Techniques I, II, and III
  Fall // Winter // Spring 2013-2014 // Spring 2019

SELECTED PUBLICATIONS & PRESENTATIONS

Tamara Smyth and Jennifer Hsu. "Power-preserving nonlinear modal coupling, feedback frequency/phase modulation, and the stretched allpass filter," presented at the 176th Meeting of the Acoustical Society of America (ASA). Victoria, BC, Canada. Oct 2018.

Tamara Smyth, Jennifer Hsu, and Ryan Done. "Toward a real-time waveguide mesh implementation," in *Proceedings of the 2017 International Symposium on Musical Acoustics*. Montreal, Canada. June 2017, pp. 54-57.

Tamara Smyth and Jennifer Hsu. "Toward a real-time parametric percussion instrument based on a waveguide mesh," presented at the *5th Joint Meeting of the Acoustical Society of America (ASA) and Acoustical Society of Japan (ASJ)*. Honolulu, Hawaii. Dec 2016.

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 16th International Society for Music Information Retrieval Conference (ISMIR)*. Málaga, Spain. Oct 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 41st International Computer Music Conference (ICMC)*. Denton, Texas. Sept/Oct 2015, pp. 182-185.

AWARDS & GRANTS

Spring 2019 Graduate Student Travel Grant
UC San Diego, Department of Music

Winter 2019 Dissertation Fellowship
UC San Diego, Department of Music

2016-2017 Teaching Assistant Excellence Award
UC San Diego, Department of Music

Summer 2015 GSA Travel Grant
UC San Diego, Graduate Student Association

VOLUNTEER

Music Mixer
Senior Stacks & Main Stacks // *facebook.com/mainstacksdanceteam/*
SF Funksters // *facebook.com/funkanometrysf/*
Sept 2008 – present
Weave together a mix of five to seven songs for various urban choreography dance teams.

Conference Paper Reviewer
Intercultural Music Conference (ICM) 2016
icm2016.wordpress.com/
San Diego, CA // Dec 2015

Committee Member & Music Performer
Center for Computer Research in Music and Acoustics (CCRMA) Modulations
ccrma.stanford.edu/events/modulations/
Stanford, CA & San Francisco, CA // Jan – April 2013
• Aid in venue, marketing, performers, and set time decisions.
• Present a live electronic music set

SOFTWARE SKILLS

Programming: Matlab, C/C++, Python
Audio: Ableton, Pd

REFERENCES

Available upon request.