

Liang Chen

901 E. 10th Street | Bloomington, IN 47408
(812) 361-3689 | chen348@indiana.edu
<http://homes.soic.indiana.edu/chen348>

Education

Ph.D. Indiana University, Bloomington, IN, USA 2012 - 2017 Fall(Expected)

- Major: Information Science. Minor: Statistics. Cumulative GPA: 3.9/4.0.

M.S. Chinese Academy of Sciences, Beijing, China 2009 - 2012

- Artificial Neural Network Lab, Institute of Semiconductors. Honored with *Entrance Examination Waiver*

B.S. Shanghai Jiao Tong University, Shanghai, China 2005 - 2009

- Major: Microelectronics. Grade A in Independent Admission Test (Top 10%)

Research Experience

Human-Interactive Optical Music Recognition 2015 - 2016

- Designed and implemented human-in-the-loop computation algorithm to combine the power of machine recognizer and human intelligence for music symbol recognition.
- Managed version control on Github and created system *documentation* to facilitate the development in group.
- Implemented system logging, annotation tool and bird's-eye-view video recording for evaluation experiments and demonstrations.

Hybrid HMM-RNN for Optical Music Recognition (OMR) 2016

- Proposed a hybrid deep learning model for optical music recognition. Trained neural networks to jointly predict rhythm and pitch labels from the images of scores. [[project link](#)] [[abstract](#)]

Automatic Synthesis of Expressive Music Instrument Sounds 2016

- Extracted mid-level features (pitch, timbre, dynamics etc.) from audio data. Synthesized new instrumental sound by concatenating a sequence of audio frames that preserve the melody, rhythm and expressiveness of the source audio.

MIDI-Assisted Egocentric Optical Music Recognition 2015

- Created and annotated egocentric music score dataset.
- Designed and implemented algorithms such as foreground-background segmentation, RANSAC staff detection and MIDI-to-note alignment for OMR in the egocentric scenario.

Renotation from Optical Music Recognition 2014 - 2015

- Proposed convex optimization formulation for automatic music renotation.
- Implemented renotation system that allows dynamic score rendering in an arbitrary rectangle, automatic score-to-parts and transposition.

Holistic Scene Understanding for Monophonic Sheet Music 2013

- Realized real-time and robust Optical Music Recognition for monophonic music.
- Awarded as the best project in school's annual Intelligent Systems Open House demonstrations.

CT Assisted Enhancement of Gastrointestinal Endoscopic Pictures and Virtual Exstrophy for Diagnostics, Sponsored by TI Innovation Funds 2009

- Visualized 3D model of digestive tract using OpenGL.
- Implemented virtual exstrophy algorithm on TI Davinci DSP platform.

Publications	Liang Chen , Christopher Raphael. Renotation of Optical Music Recognition Data, <i>submitted to TENOR</i> , 2017.		
	Liang Chen , Rong Jin, Christopher Raphael. Human-Guided Recognition and Interpretation of Music Score Images, <i>submitted to CVPR</i> , 2017.		
	Sanna Wager, Liang Chen , Minje Kim, Christopher Raphael. Towards Expressive Instrument Synthesis Through Smooth Frame-by-frame Reconstruction: From String to WoodWind, <i>accepted by ICASSP</i> , 2017.		
	Liang Chen , Erik Stolterman, Christopher Raphael. Human-Interactive Optical Music Recognition, ISMIR, 2016.		
	Christopher Raphael, Liang Chen , Yucong Jiang, Rong Jin, Erik Stolterman. Optical Music Recognition with Human Labeled Constraints, CHI Workshop on Human-Centred Machine Learning, 2016.		
	Liang Chen , Kun Duan. MIDI-Assisted Egocentric Optical Music Recognition, IEEE Winter Conference on Applications of Computer Vision, 2016.		
	Liang Chen , Christopher Raphael. Human-Directed Optical Music Recognition, Electronic Imaging, 2016.		
	Liang Chen , Rong Jin, Christopher Raphael. Renotation from Optical Music Recognition, Mathematics and Computation in Music, 2015.		
	Liang Chen , Weijun Li, Chen Chen. Research on the Principle of Homology-Continuity in Image Degradation, AICI, 2011.		
Posters	Liang Chen , Rong Jin, Simo Zhang, Stefan Lee, Zhenhua Chen, David Crandall, A Hybrid HMM-RNN for Optical Music Recognition, ISMIR Late Breaking, 2016.		
	Liang Chen , Christopher Raphael. Ceres: An Interactive Optical Music Recognition System, ISMIR Late-Breaking, 2015.		
Code	OMR for MuseScore (C++) , <i>staff detection and system identification</i> AnChiPy (Python) , <i>traditional Chinese typesetting</i>		
Internship	Software Development Engineer , MuseScore		2015
	<ul style="list-style-type: none"> • Incorporated Poppler into MuseScore to support PDF reading and conversion. • Implemented Optical Music Recognition module; applied nested Dynamic Programming for automatic system identification. 		
Awards	ThinkTank Student Grant , ISMIR		2016
	Finalist , ITA Tech Coding Challenge (Top 10%)		2015
	Student Travel Award , SOIC, IUB		2015
	Best Project Award , Intelligent Systems Open House, SOIC, IUB		2014
	Excellent Thesis Award , MicroE (Top 10), SJTU		2009
	Excellent Project Award , College Students Summer Social Practice, Shanghai		2007
	Honorable Mention , 9th Mathematical Contest in Modeling, East China Area		2007
	Excellent Academic Scholarship , SJTU (twice)		2006 & 2007
	“Three Goods” Student , SJTU (Top 5%)		2006
	Excellent Student Award , MicroE (Top 1), SJTU		2006
Service & Volunteering	Subreviewer, AAAI		2017
	Student Volunteer, CHI4GOOD Day of Service, ACM CHI 2016		2016
	Student Volunteer, WACV		2016
	Coordinator, <i>SOIC music informatics reading group</i>		2015 - 2016
	Group Leader, Baidu Club, CAS		2009 - 2010
Teaching	Teaching Assistant of I547: Music Information Processing: Audio		2015 Fall
	Associate Instructor of I211: Information Infrastructures II (Python)		2014 - 2015
	Associate Instructor of I201: Mathematical Foundations of Informatics		2013 - 2014
Computing Skills	<u>Languages</u> : Java, Python, C, Objective-C, Matlab, C++, R, L ^A T _E X, Javascript, HTML		
	<u>Tools</u> : Xcode, PyCharm, Matlab, Git, Emacs, Gcc, Eclipse, Visual Studio		
	<u>Machine Learning Packages</u> : Scikit-Learn, TensorFlow, Caffe, OpenCV		
Hobbies	Playing Piano, Running, and Reading		