

# Yu-Ding Lu

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## Curriculum Vitae

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### Education

- Master of Science  
**University of California, Merced, CA, USA**  
2018 - Present, Electrical Engineering and Computer Science
- Bachelor of Science  
**National Chiao Tung University, Hsinchu, Taiwan**  
2010 - 2014 Electrical and Computer Engineering

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### Work & Research Experience

- Aug. 2018 - Present  
**Graduate Student, Vision and Learning Lab, UC Merced, CA, USA**  
*Advisor: Ming-Hsuan Yang*  
Topic: Audio-Visual
- Dec. 2017 - Jul. 2018  
**AI & DSP Engineer, Intelligo Technology Inc., Hsinchu, Taiwan**  
*Mentors: Chenchu Hsu, Tsungliang Chen*  
Topic: Speech Enhancement
- Jun. 2017 - Aug. 2017  
**Short-Term Scholar, JSALT 2017, Carnegie Mellon University, PA, USA**  
*Mentors: Jun Du, Yu Tsao, Mahesh Krishnamoorthy, Kenneth Ward Church*  
Topic: Speaker Diarization, Speech Enhancement
- Mar. 2016 - Dec. 2017  
**Biology & Audio Signal Processing Lab, Academia Sinica, Taipei, Taiwan**  
*Advisor: Yu Tsao*  
Topic: Speaker Verification, Speech Enhancement, Speech Recognition

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### Publication ([Google Scholar profile](#))

- ICASSP 2018  
**Enhancement And Analysis of Conversational Speech: JSALT 2017**  
Neville Ryant, Erika Bergelson, Kenneth Church, [and 15 others including **Yu-Ding Lu**],  
IEEE International Conference on Acoustics, Speech and Signal Processing
- ICASSP 2018  
**A Novel LSTM-Based Speech Preprocessor For Speaker Diarization In Realistic Mismatch Conditions**  
Lei Sun, Jun Du, Tian Gao, **Yu-Ding Lu**, Yu Tsao, Chin-Hui Lee and Neville Ryant,  
IEEE International Conference on Acoustics, Speech and Signal Processing
- IJCLCLP 2018  
**A Replay Spoofing Detection System Based on Discriminative Autoencoders**  
Chia-Lung Wu, Hsiang-Ping Hsu, **Yu-Ding Lu**, Hung-Shin Lee, Yu Tsao and Hsin-Min Wang.  
International Journal of Computational Linguistics and Chinese Language Processing
- INTERSPEECH 2017  
**Discriminative Autoencoders for Acoustic Modeling**  
Ming-Han Yang, Hung-Shin Lee, **Yu-Ding Lu**, Kuan-Yu Chen, Yu Tsao, Berlin Chen and  
Hsin-Min Wang. International Speech Communication Association
- ICASSP 2017  
**Discriminative Autoencoders For Speaker Verification**  
Hung-Shin Lee, **Yu-Ding Lu**, Chin-Cheng Hsu, Yu Tsao, Hsin-Min Wang, and Shyh-Kang Jeng  
IEEE International Conference on Acoustics, Speech and Signal Processing
- Sensors 2016  
**Transportation Modes Classification Using Sensors on Smartphones**  
Shih-Hau Fang, Hao-Hsiang Liao, Yu-Xiang Fei, Kai-Hsiang Chen, Jen-Wei Huang,  
**Yu-Ding Lu** and Yu Tsao. Sensors, 2016.

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## Project

Sep. 2018 - Present	<b>Generate Spatial Audio from Video and Mono Audio</b> <ul style="list-style-type: none"><li>- Combined audio-visual features to improve spatial audio generation.</li></ul>
Sep. 2018 - Dec. 2018	<b>Address NUMA problem for ML training on TensorFlow</b> <ul style="list-style-type: none"><li>- Improved training performance on NUMA structure CPU.</li></ul>
Dec. 2017 - Jul. 2018	<b>Speech Enhancement Application on AI chips</b> <ul style="list-style-type: none"><li>- Developed noise reduction algorithm by RNN</li><li>- Deployed this chip on "Xiaomi AI Speaker"</li></ul>
Sep. 2016 - Dec. 2017	<b>Audio-visual speech enhancement for ASR system</b> <ul style="list-style-type: none"><li>- Used CNN to extract image feature for lips from video.</li><li>- Combined video feature with MFCC to improve performance for ASR.</li></ul>
Jun. 2017 - Aug. 2017	<b>Enhancement and Analysis of Conversational Speech</b> <ul style="list-style-type: none"><li>- Proposed a novel ML model to improve intelligibility on speaker diarization.</li></ul>
Sep. 2016 - Apr. 2017	<b>Discriminative Autoencoders for Acoustic Modeling</b> <ul style="list-style-type: none"><li>- Developed autoencoders aiming at acoustic modeling for ASR.</li></ul>
Dec. 2016 - Mar. 2017	<b>Automatic Speaker Verification Spoofing Challenge</b> <ul style="list-style-type: none"><li>- Applied discriminative autoencoders in ASVspoof challenge 2017</li></ul>
Mar. 2016 - Sep. 2016	<b>Discriminative Autoencoders For Speaker Verification</b> <ul style="list-style-type: none"><li>- Proposed a novel loss function aiming at speaker verification</li><li>- Encoded i-vector into a new feature representation</li></ul>
Mar. 2016 - Sep. 2016	<b>Transportation Modes Classification</b> <ul style="list-style-type: none"><li>- Applied DNN in transportation mode classification task.</li></ul>

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## Technical Skills

Programming	Python, Matlab, C++, Bash
Toolbox / Software	Pytorch, TensorFlow, Keras, Kaldi, Sox, OpenCV
Digital Audio software	Logic Pro X, Garage Band, Ableton Live
Music	Electric Guitar, Acoustic Guitar, Keyboard, PA Engineering

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## Leadership & Activities

Staff	ROCLING 2017, Taipei, Taiwan <ul style="list-style-type: none"><li>- Assisted to host the top conference on computational linguistics and speech processing.</li></ul>
Invited Talk	Deep Learning Introduction, ASUS Cloud, Taipei, Taiwan <ul style="list-style-type: none"><li>- Introduced the latest NN models and gave a speech about how to use Keras &amp; TensorFlow.</li></ul>
Director	Star Voice - Club of Rock'n Roll, NCTU, Hsinchu, Taiwan <ul style="list-style-type: none"><li>- Managed around 30 bands and arranged the public performance.</li></ul>
Leader of PR Department	Electrical and Computer Engineering Summer Camp, NCTU, Hsinchu, Taiwan <ul style="list-style-type: none"><li>- Recruited for 150 students to join this camp and got 3000 USD sponsorships funds.</li></ul>
Leader of Activities	Freshman Orientation Camp, NCTU, Hsinchu, Taiwan <ul style="list-style-type: none"><li>- Arranged activities for 300 freshmen.</li></ul>