Yi-Lin Tuan

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Education

- **National Taiwan University**
  Bachelor of Science in Electrical Engineering, **GPA 3.94/4.0** Sep. 2013 - June. 2017

Publications

[1] Che-Ping Tsai*, Yi-Lin Tuan*, Lin-shan Lee. *Transcribing Lyrics from Commercial Song Audio: the First Step towards Singing Content Processing*. to appear in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2018. (*: first co-authors)

[2] Yi-Lin Tuan, Hung-yi Lee. *(under doubled-blind review)*. submitted to the Association for Computational Linguistics (ACL), 2018.

Research Experiences

- **Speech Processing Laboratory** National Taiwan University
  Advisor: Prof. Lin-shan Lee Aug. 2015 - Oct. 2017
  - **Lyrics Recognition Studies**: integrated characteristics of music and lyrics into speech recognition to establish lyrics recognition system.[1]
- **Speech Processing and Machine Learning Laboratory** National Taiwan University
  Advisor: Prof. Hung-yi Lee Feb. 2016 - Present
  - **Deep Reinforcement Learning**: investigated actor-critic architecture and deep deterministic policy gradient (DDPG) on continuous and large discrete action space.
  - **Myth Buster (co-advisor: Prof. Biing-Hwang Juang)** **[PDF]**: compared and analyzed the capacity and modeling power of different generative models; conducted various generative adversarial nets (GAN) with both game theory and energy-based aspects.
  - **Chit-chat Chatbot**: implemented neural dialogue generation and its improving methods, ranging from deep reinforcement learning to GANs.[2]

Work Experiences

- **Speech Processing and Machine Learning Laboratory** National Taiwan University
  Research Assistant; Hosts: Prof. Hung-yi Lee, Prof. Lin-shan Lee Oct. 2017 - present.
  - researches on natural language understanding and generation.
  - instructs undergraduate students in dialogue generation, seq2seq model and GANs.
- **Machine Learning and Having it Deep and Structured** National Taiwan University
  Teaching Assistant; Lecturer: Prof. Hung-yi Lee Feb. 2017 - July. 2017
  - **Generative Adversarial Nets**: presented variations of generative adversarial nets.
  - **Reinforcement Learning for Chatbot**: demonstrated the training of chatbot and recent reinforcement learning algorithms on sequence generation, and evaluated the homework.

Selected Projects

- **Automatic Piano Accompaniment Robot[DEMO][PDF]** *Oct. 2016 - Feb. 2017*
  - **Techniques**: designed the mechanism of piano accompaniment robot with LEGO-EV3, and programmed in MATLAB to perform *retrieval by singing and humming* and *trajectory planning*.
  - **Achievement**: extended to press almost every chords in an octave, developed multiple modes for playing chords, and accelerated the transmission rate of action commands to pseudo real-time.
- **Unity3D Game with Realtime Pitch Tracking[DEMO]** *Apr. 2016 - June 2016*
  - **Techniques**: programmed in Unity3D (C#) to establish a 3D game that could control the motion of ball by *real-time pitch tracking*.
  - **Achievement**: expanded the control of movement by pitch and spider silk by unvoiced sound.
- **Mobile 3D Projector on FPGA[DEMO][PDF]** *Oct. 2015 - Aug. 2016*
  - **Techniques**: programmed in System Verilog on FPGA, and optimized the memory and time efficiency.
  - **Achievement**: produced plausible 3D article by projecting four sides of an object onto a specific physical structure; accelerated the manipulation of rotation.

Awards & Honors

- **Outstanding Achievement Award** — Innovate Asia Design Contest, Altera
  Topic: Mobile 3D Projector on FPGA — Aug. 2016
- **Presidential Award** — National Taiwan Univesity
  Rank 1/169; given to top 5% of the class — Mar. 2014

Skills

- **Programming Languages**: Python, C++, Matlab, System Verilog
- **API and Toolkits**: Tensorflow, Theano, Keras, Scikit-Learn, matplotlib, Kaldi, Praat, LaTeX, Git