Justin **Yang**

Research Assistant · Acadamia Sinica

Taipei, Taiwan

(+886) 939-378-371 | justinyang1110@gmail.com | justinyang1996.github.io/homepage.html | justinyang1110

Research Interest

Signal Processing, Speech Processing, Machine Learning

Education

National Chiao Tung University

Hsinchu, Taiwan

B.S. in Electrical and Computer Engineering

Sept. 2014 - Jun. 2018

- Cumulative GPA : 3.98 / 4.3 (3.86 / 4.0)
- Last 60 GPA : 4.18 / 4.3 (3.95 / 4.0)
- Related Graduate-Level Courses : **Detection and Estimation Theory** (A+), **Machine Learning** (A+), **Pattern Recognition** (A+), **Digital Signal Processing** (A+), **Deep Learning** (A+), **Computer Vision** (Ongoing), **Time-frequency Analysis and Wavelet Transform** (Ongoing)

Research Experiences

Communication Signal and Information Processing (CSIP) Lab ,Graduate Institute of Communications Engineering, National Taiwan University (NTU)

Taipei, Taiwan

Research Assistant, Advisor: *Prof. Hsuan-Jung Su*

Sept. 2018 - PRESENT

- **Mitigating Multipath Effect for DSSS Positioning – Using Deep Learning Techniques (report file) (Ongoing Work)**
  - Traditonal positioning techniques, such as Narrow Correlator, Delta-Delta, etc., cannot work well when the transmission pulse shaping such as raised cosine is adopted.
  - Pulse shaping is required at the indoor / outdoor applications because of the bandwidth requirement.
  - We propose to use the deep learning technique to compensate the positioning error due to pulse shaping and multipath channel. And the results show that the positioning accuracy can be much improved to be within $0.01 \sim 0.02$ chip.

Speech, Language and Music Processing (SLAM) Lab, Institute of Information Science, Acadamia Sinica

Taipei, Taiwan

Research Assistant, Advisor: *Prof. Hsin-Min Wang*

Sept. 2017 - PRESENT

- **Voice Conversion using Locally Linear Embedding with pre-softmaxed Phonetic Posteriorgram (Demo Page)**
  - To perform Voice Conversion (VC) with non-parallel corpora, we utilized pre-softmaxed Phonetic PosteriorGrams (PPGs), which is obtained from Automatic Speech Recognition (ASR) and serves as a speaker-independent feature. This stands for an intermediate feature to perform conversion, and Locally Linear Embedding (LLE) as the method to contruct conversion utterances.
  - This method reaches comparable performance with parallel VC methods and outperform other non-parallel methods.
  - This work will be submitted to the **INTERSPEECH 2019** held in September in Graz, Austria.

- Participated in the **2nd Voice Conversion Challenge (VCC2018)**, both HUB and SPOKE task (**Demo Page**).
  - **Vocoder-Free Exemplar-based Voice Conversion method for parallel corpora (HUB Task)**
    - To eliminate the vocoder effects, which is one of the main causes of quality degradation, we proposed a vocoder-free Voice Conversion system with a combination of the previous exemplar-based Voice Conversion system and the Differential framework, which utilizes spectral difference to synthesize waveform, to construct Voice conversion.
  - **Exemplar-based Voice Conversion method for non-parallel corpora (SPOKE Task)**
    - Proposed a vocoder-based Voice Conversion method for non-parallel corpora.

- **Alleviating Discontinuity Effects on Direct Waveform Modification for Voice Conversion Synthesis (Demo Page)(Ongoing Work)**
  - Conventional Differential-based Vocoder-Free Voice Conversion methods utilize direct waveform modification based on spectrum differentials; however, when the f0-transformation ratio is relatively large, synthesized waveform results in collapse waveform that lowers the sunthesis quality.
  - To improve the Differential framework, Dynamic Time Warping (DTW) is applied when estimating spectrum difference. This alleviates the discontinuity effect that results in collapse waveform on the synthesized waveform.

Speech, Language and Music Processing (SLAM) Lab, Institute of Information Science, Acadamia Sinica *Taipei, Taiwan*

Research Intern, Advisor: *Prof. Hsin-Min Wang* *Jul. 2017 - Aug. 2017*

- **Image Deblurring Using Perceptual Generative Adversarial Network**
  - Proposed a Perceptual Generative Advarsarial Network with conditional input for image deblurring. A pretrained VGG-19 network is utilized to take away the artifact effects on images in order to improve the performance of image deblurring for live concert videos.

Mobile Intelligent Network Technology Lab, Graduate Institute of Communications Engineering, National Chiao Tung University (NCTU) *Hsinchu, Taiwan*

Undergraduate Research Student, Advisor: *Prof. Kai-Ten Feng* *Feb. 2017 - Jun. 2017*

- Developed the efficient millimeter wave beams power allocation, and users grouping system.
- Reaches 300% higher datarate per user compared to undirectional traditional beamforming methods.

Human and Machine Lab, Graduate Institute of Electrical and Control Engineering, NCTU *Hsinchu, Taiwan*

Undergraduate Research Student, Advisor: *Prof. Ku-Young Young* *Sept. 2016 - Jan. 2017*

- **Intelligent Mobility Aids for elderly**
  - Designed and build an intelligent mobility aid named I-Go, which utilizes six-axis force sensor to sense the force on the handle, camera to recognize feet image from the user to trace the user's position and state, and LiDAR laser scanner to scan the environment in front of I-Go to perform obstacle avoidance, eventually decide the next behavior to be constructed by paired motors.
  - Developed a cross-platform server for sensors to communicate each other.

Honors & Awards

2018 **Recipient,** GICE Scholarship *NTU GICE*

2018 **1st Place,** Senior Year, Spring 2018 Academic Achievement Award *NCTU ECE*

2017 **1st Place,** Senior Year, Fall 2017 Academic Achievement Award *NCTU ECE*

2017 **Recipient,** Datatronics Technology Scholarship *Datatronics Technology Inc.*

Honored to Top 1 junior and senior student in college of ECE, NCTU,

Skills

- Programming Languages: **C/C++**, **Python**, **Java**, **C#**, **Matlab**, **HTML**, **Verilog**
- Programming Libraries: **Tensorflow**, **OpenCV**