

# SHANG-YI CHUANG

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## SUMMARY OF QUALIFICATIONS

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Extremely self-motivated engineer with excellent understanding of machine learning algorithms

- 5+ years experience in developing software programs for scientific research
- 3+ years experience in **Speech Processing and Language Processing**
- Strong expertise in deep learning frameworks including **PyTorch**, **TensorFlow**, **Keras**, and **scikit-learn**

## EDUCATION

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**Cornell Tech at Cornell University** in New York, United States

2021 – Expected 2022

- M.Eng. in **Computer Science**
- Cornell Tech Merit-Based Scholarship
- Courses: Machine Learning Engineering, Algorithms and Data Structures for Applications

**National Taiwan University** in Taipei, Taiwan

2012 – 2017

- B.S. in Mechanical Engineering, Minor in Electrical Engineering; GPA: 3.86/4.30
- Dean's List Award (Top 5% of the class in GPA)

**Osaka University** in Osaka, Japan

2016 – 2017

- Frontier Lab Special Auditor in Adaptive Machine Systems; Grade: Highest grade
- Japan Student Services Organization Scholarship

## WORK EXPERIENCE

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**Research Assistant at Academia Sinica** in Taipei, Taiwan

2019 – 2021

- **Audio-Visual Multimodal Learning for On-device Systems** (IEEE/ACM TASLP, INTERSPEECH 2020)
  - Improved system robustness against insufficient hardware or inferior sensors by a data augmentation scheme
  - Minimized additional multimodal processing costs by applying an autoencoder and data quantization techniques
  - Significantly reduced the size of data to 0.33% without sacrificing speech enhancement performance
- **Cross-Lingual Movie QA (Question Answering) System**
  - Reduced unfavorable inequalities in technology caused by limited data in minority languages
  - Applied transfer learning to a Mandarin system by incorporating translated corpus in dominant languages
  - Achieved zero-shot learning on Mandarin movie QA tests by using pre-trained multilingual models
- **EMA (Electromagnetic Midsagittal Articulography) Systems** (ISCAS 2021, EUSIPCO 2021)
  - Designed silent speech for patients with vocal cord disorders by joint training mel-spectrogram and deep feature loss
  - Improved the character correct rate of automatic speech recognition by 30% in speech enhancement tasks
  - Incorporated EMA into end-to-end speech synthesis systems and achieved 83% preference in subjective listening tests
- **Self-Supervised Learning on Speech Enhancement**
  - Realized speech enhancement by applying a denoising autoencoder with a linear regression decoder
  - Enhanced 43% of speech quality without limited intrusive paired data
  - Potentially empowered the realization of unsupervised dereverberation

## SELECTED PUBLICATIONS

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- [1] **S.-Y. Chuang**, Y. Tsao, C.-C. Lo, and H.-M. Wang, "Lite Audio-Visual Speech Enhancement," in *Proc. INTERSPEECH 2020*.
- [2] Y.-W. Chen, K.-H. Hung, **S.-Y. Chuang**, J. Sherman, X. Lu, and Y. Tsao, "A Study of Incorporating Articulatory Movement Information in Speech Enhancement," in *Proc. EUSIPCO 2021*.

## SKILLS

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<b>Programming Language</b>	Python, C, MATLAB, Bash, Visual Basic, SQL, LabVIEW, Verilog
<b>Toolbox</b>	Dlib, OpenCV, FFmpeg, Hugging Face, SoX, Praat, librosa, pandas
<b>Visualization</b>	visdom, Matplotlib, plotly, gnuplot, Inkscape, Visio