

# SHANG-YI CHUANG



## RESEARCH INTERESTS

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Intercultural Learning	Natural Language Processing	Social Robot	Multimodal Learning
Machine Translation	Acoustic Signal Processing	Computer Vision	Machine Learning

## EDUCATION

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<b>National Taiwan University (NTU)</b> in <i>Taiwan</i> , GPA: 3.86/4.30 B.S., Major in <b>Mechanical Engineering (ME)</b> , Minor in <b>Electrical Engineering</b> Advanced Medical Device Lab, Advisor: Prof. Hao-Ming Hsiao	2012 – 2017
<b>Osaka University</b> in <i>Japan</i> , Grade: S (Highest grade) FrontierLab@OsakaU Program Motor Intelligence Lab, Advisor: Prof. Tomomichi Sugihara	2016 – 2017
<b>Heidelberg University</b> in <i>Germany</i> , Grade: Sehr gut (Highest grade) Summer Study Abroad Program at NTU	Summer 2013

## PROFESSIONAL EXPERIENCE

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<b>Research Assistant at Academia Sinica</b> in <i>Taiwan</i> Biomedical Acoustic Signal Processing Lab at Research Center for Information Technology Innovation Advisor: Prof. Yu Tsao, Faculty Collaborator: Prof. Hsin-Min Wang	2018 – Present
– <b>Real-World Application of Multimodal Learning on Speech Enhancement (SE) [1, 5]</b> <ul style="list-style-type: none"><li>Improved the applicability of DL-based models on embedded systems.</li><li>Confirmed the effectiveness of lip images (both compressed and non-compressed) in SE tasks.</li><li>Addressed asynchronous and low-quality multi-data problems.</li></ul>	
– <b>Self-Supervised Multimodal Learning</b> <ul style="list-style-type: none"><li>Applied a denoising autoencoder with a linear regression decoder to audio-only and audio-visual SE.</li><li>Included only unlabeled data in both situations.</li></ul>	
– <b>Cross-lingual QA System</b> <ul style="list-style-type: none"><li>Implemented transfer learning with additional English corpus to enhance a Mandarin QA System.</li></ul>	

## PUBLICATIONS

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- [1] **S.-Y. Chuang**, H.-M. Wang, and Y. Tsao, “Improved Lite Audio-Visual Speech Enhancement,” submitted to *IEEE/ACM Transactions on Audio, Speech, and Language Processing*.
  - [2] Y.-W. Chen, K.-H. Hung, **S.-Y. Chuang**, J. Sherman, X. Lu, and Y. Tsao, “EMA2S: An End-to-End Multimodal Articulatory-to-Speech System,” in *Proc. ISCAS 2021*.
  - [3] 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,” submitted to *ICASSP 2021*.
  - [4] S.-W. Fu, C.-F. Liao, T.-A. Hsieh, K.-H. Hung, S.-S. Wang, C. Yu, H.-C. Kuo, R. E. Zezario, Y.-J. Li, **S.-Y. Chuang**, Y.-J. Lu, and Y. Tsao, “Boosting Objective Scores of Speech Enhancement Model through MetricGAN Post-Processing,” in *Proc. APSIPA 2020*.
  - [5] **S.-Y. Chuang**, Y. Tsao, C.-C. Lo, and H.-M. Wang, “Lite Audio-Visual Speech Enhancement,” in *Proc. Interspeech 2020*.

## ACADEMIC PROJECTS

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### Software

- **Dynamics of Robot Arms** 2016 – 2017
  - Smoothed the velocity profiles and trajectories of robot arms.
  - Realized a safer human-robot environment by applying biological statistics results.

### Culture

- **Japanese Translation** 2015 – 2016
  - Translated Japanese music-related materials into Mandarin or English.
  - Compared the parsing techniques between different languages.

### Hardware

- **Pneumatic Car** 2014 – 2015
  - Built an electric-powered gas-propelled vehicle.
  - Designed an airfoil based on turbine simulations.
  - Enabled the car to race through obstacle courses within the given time.
- **Structural Design of Stents** 2013 – 2015
  - Investigated and sought for the best design of stent crowns.
  - Enhanced the strength and sustainability of the stent structure by the crown arrangement.

## LEADERSHIP EXPERIENCE

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- Server Manager** at Biomedical Acoustic Signal Processing Lab 2019 – Present
- Treasurer** at NTU Photo Club 2015 – 2016
- Director** of Darkroom at NTU Photo Club 2014 – 2015
- Captain** of Radio Controlled Hovercraft in ME Robot Cup 2014 – 2015
- Senior Assistant** of Kaohsiung Alumni Association Club at NTU 2013 – 2014
- NTU Student Representative** of Summer School at Heidelberg University Summer 2013

## AWARDS AND HONORS

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- ISCA and Interspeech Travel Grant** 2020
- Japan Student Services Organization Scholarship** at Osaka University 2016 – 2017
- Second Prize in ME Robot Cup** at NTU 2015
- Dean's List Award** (Top 5% of the class in GPA) of ME at NTU 2013

## TECHNICAL SKILLS

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- Programming Language** Python, C, MATLAB, Bash, Visual Basic, LabVIEW, Verilog
- Machine Learning Framework** PyTorch, Keras, TensorFlow, scikit-learn
- Feature Engineering** Dlib, OpenCV, FFmpeg, SoX, Praat

## LANGUAGE SKILLS

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| English<br>(Fluent) | Japanese<br>(Fluent, JLPT N1) | German<br>(Beginner) | Spanish<br>(Beginner) | Taiwanese<br>(Native) | Mandarin<br>(Native) |
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## ACADEMIC SERVICE

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- Reviewer** of IEEE Signal Processing Letters 2021
- Reviewer** of IEEE/ACM Transactions on Audio, Speech, and Language Processing 2020