

# SHANG-YI CHUANG

Research Center for Information Technology Innovation (CITI), Academia Sinica, Taiwan



## 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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**National Taiwan University (NTU)** Cumulative GPA: 3.86/4.30 2012 – 2017, *Taiwan*

B.Eng., Major in Mechanical Engineering (ME), Minor in Electrical Engineering

Advanced Medical Device Lab, Advisor: Prof. Hao-Ming Hsiao

**Osaka University (OU)** Rank: S (Highest rank) 2016 – 2017, *Japan*

FrontierLab@OsakaU Program

Motor Intelligence Lab, Advisor: Prof. Tomomichi Sugihara

**Heidelberg University** Rank: Sehr gut (Highest rank) 2013 Summer, *Germany*

NTU Student Representative of Summer School

## PROFESSIONAL EXPERIENCE

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**Academia Sinica – CITI**

2018 – Present

RA, Advisor: Prof. Yu Tsao, Biomedical Acoustic Signal Processing Lab

*Taipei, Taiwan*

Faculty Collaborator: Prof. Hsin-Min Wang (IIS)

- **Real-World Application of Multimodal Learning on Speech Enhancement (SE) [1, 4]**
  - Improved the applicability of DL-based models on embedded systems.
  - Confirmed the effectiveness of lip images (both compressed and non-compressed) in SE tasks.
  - Addressed asynchronous and low-quality multi-data problems.
- **Self-Supervised Multimodal Learning**
  - Applied a denoising autoencoder with linear regression decoder to audio-only SE and audio-visual SE.
  - Both situations contain only unlabeled data.
- **Cross-lingual QA System**
  - Used transfer learning and additional English corpus to enhance a Taiwanese Mandarin QA System.

## PUBLICATIONS

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- [1] **S.-Y. Chuang**, H.-M. Wang, and Y. Tsao, “Improved lite audio-visual speech enhancement,” submitted to *Neural Networks*, 2020.
- [2] Y.-W. Chen, K.-H. Hung, **S.-Y. Chuang**, J. Sherman, and Y. Tsao, and X. Lu, “A study of incorporating articulatory movement information in speech enhancement,” submitted to *Proc. ICASSP 2020*.
- [3] 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*.
- [4] **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
  - Used biological statistics results to make humans feel more comfortable when working with the robots.
  - The velocity profiles and trajectories of the arms were successfully smoothed and a safer working environment for humans was created.

### Hardware

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

### Culture

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

## LEADERSHIP

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### **Director of Darkroom, NTUPHOTO**

Achievements include: the renovation of darkroom (including hardware and software), financial management, chemical maintenance system, novice training, technology promotion.

### **Captain of Radio Controlled Hovercraft, NTUME**

Led the team to win the 2nd prize in ME Robot Cup.

### **NTU Student Representative of Summer School of Heidelberg University**

Provided local support for NTU students in Heidelberg University.

## TECHNICAL SKILLS

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<b>Natural Language</b>	GRE General 324, TOEFL iBT 105, JLPT N1, Mandarin (Native)
<b>Programming Language</b>	Python, C, MATLAB, Bash, Visual Basic, LabVIEW, Verilog
<b>Machine Learning Framework</b>	PyTorch, Keras, TensorFlow, scikit-learn
<b>Feature Engineering</b>	Dlib, OpenCV, FFmpeg, SoX, Praat

## AWARDS AND HONORS

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<b>ISCA and Interspeech Travel Grant</b>	2020, <i>China</i>
<b>JASSO Scholarship</b>	OU, 2016-2017, <i>Japan</i>
<b>2nd Prize in ME Robot Cup</b>	ME, NTU, 2015, <i>Taiwan</i>
<b>Dean's List Award</b> (Top 5% of the class in GPA)	ME, NTU, 2013, <i>Taiwan</i>

## ACADEMIC SERVICE

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<b>Reviewer, IEEE Transactions on Audio, Speech and Language Processing</b>	2020
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