Yi Jen (Ian) **Shih**

Undergraduate Researcher

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Education

National Taiwan University(NTU)   *Taipei, Taiwan (R.O.C.)*
B.S. in Electrical and Engineering   *Sep. 2018 - Jun. 2022*

- **GPA**: overall: **4.11/4.30 (3.93/4.00)**, last year: **4.26/4.30**
- **Honors**: Dean's List Award
- **Selected Courses**: Data Structure and Programming 2019 Fall (**A+**), Machine Learning 2020 Spring (**A+**), Digital Speech Processing 2020 Fall (**A+**), Data Science 2021 Fall (**A+**), Deep Learning for Human Language Processing 2022 Spring (**A+**)

Publications * indicates equal contributions

[1] Layne Berry, **Yi-Jen Shih**, Hsuan-Fu Wang, Heng-Jui Chang, Hung-Yi Lee, and David Harwath. M-speechclip: Leveraging large-scale, pre-trained models for multilingual speech to image retrieval. *submitted to IEEE ICASSP*, 2023.

[2] **Yi-Jen Shih**, Hsuan-Fu Wang, Heng-Jui Chang, Layne Berry, Hung yi Lee, and David Harwath. Speechclip: Integrating speech with pre-trained vision and language model. *IEEE SLT*, 2022.

[3] **Yi-Jen Shih**, Shih-Lun Wu, Frank Zalkow, Meinard Müller, and Yi-Hsuan Yang. Theme transformer: Symbolic music generation with theme-conditioned transformer. *IEEE Transactions on Multimedia*, 2022.

Research Experience

Speech Processing Lab, NTU, Advisor: Prof. Hung-Yi Lee   *Taipei, Taiwan*
Undergraduate Researcher   *Sept. 2021 - Current*

- Participate in JSALT workshop Visually Enhanced Group [URL]
- Proposed SpeechCLIP [Github] [Blog] [axXiv]
    - Bridge unparallel speech and text data via visual signal
    - Achieve SOTA on Image-Speech Retrieval
    - Accepted by *2022 IEEE Workshop on Spoken Language Technology (SLT)*
- Present SpeechCLIP at JSALT Ending Day [URL]

Music and AI Lab, Academia Sinica, Advisor: Prof. Yi-Hsuan Yang   *Taipei, Taiwan*
Research Assistant   *Jul. 2020 - Jun. 2022*

- Collect dataset for paired classical musical themes and entire composition
- Revise LCS method for theme retrieval
- Proposed Theme-conditioned music generation [Github] [Blog] [arXiv]
    - Accepted by *IEEE Transactions on Multimedia* [link]
    - Won **1st prize** and **Most Popular Award** at Bachelor Thesis Award Electrical Engineering Dept. at NTU
    - Invited talk at MILA x Vector [Youtube]
- Working on Transformer vq-vae for Multitrack Music Generation

Teaching Experience

Machine Learning Course by Prof. Hung-Yi Lee   *Taipei, Taiwan*
Teaching Assistant   *Feb. 2020 - Jun. 2020*

- Design machine learning assignment for phoneme classification and grading

Deep learning for Human Langauge Processing Course by Prof. Hung-Yi Lee   *Taipei, Taiwan*
Teaching Assistant   *Sept. 2022 -*

- Lead undergraduate students doing research project on multimodal speech processing

Experience

Reviewer at ISCSLP   *Singapore*
Reviewer   *Sept. 2022*

Invited Talk at Music + AI Reading Group by Mila x Vector *QC, Canada*

Invited talker *Sept. 2020 - Jun. 2021*

- Present Theme Transformer

UC Berkeley *CA, USA*

Summer Session Student *Jul. 2019 - Aug. 2019*

- Learn MAX/MSP in Berkeley CNMAT

NTUEE Student Association Marketing Department *Taipei, Taiwan(R.O.C)*

Director *Sept. 2020 - Jun. 2021*

- Teach Visual Effects lesson and Organize activities

NTUEE Summer Camp *Taipei, Taiwan (R.O.C.)*

Teaching Director *Jul. 2021 - Aug. 2021*

- Teach 30+ student for basic web crawler knowledge
- Organize activities

Selected Projects

MusicChain [Github] *Taipei Taiwan*

Course final for Web and Multimedia *Jun. 2021*

- Integrate smart contract into profit sharing music cover system
- Get cooperation invitation from startup from *Emlyon Business School*
- Won **3rd** prize at Bachelor Thesis Award Electrical Engineering Dept. at NTU

NTUEE LightDance [Github] [YouTube] *Taipei, Taiwan*

Software Developer *Jul. 2012*

- Design front-end RPI control interface
- Devise time synchronize mechanism between RPI and server

Sensor your music [Github] *Taipei, Taiwan*

Midterm project for Music Computing Class *Sep. 2021*

- Design an interface to control PureData by smartphones via web browser

NTUEE Automatic Theremonitor System [Github] *Taipei, Taiwan*

To collect the COVID-19 infected trace *Sep. 2012*

- Develop server-client code to track COVID-19 traces in NTU campus
- Awarded Social Devotion Special Award at NTU

Midi2tiles [Github] *Taipei, Taiwan*

Develop music visualization program *Nov. 2021*

- Develop a program to generate midi tiles from midifiles

Apache Submarine [Github] *Taipei, Taiwan*

Commit to github repo *Sep. 2021 - Jan. 2022*

- Total *11* PRs for developing CLI system for Submarine User and fix various bugs in front-end

Honors & Awards

2011	**2nd Place**, World Robot Olympiad (W.R.O)	*Hsinchu, Taiwan*
2011	**Merit Award**, World Robot Olympiad (W.R.O)	*Abu Dhabi, UAE*
2019	**2nd Place**, Meichu: Hackathon	*Hsinchu, Taiwan*
2020	**Social Devotion Special Award**, at NTU, by the chancellor of NTU, Dr. Chung-Ming Kuan	*Taipei, Taiwan*
2020	**2nd Prize**, Bachelor Thesis Award Electrical Engineering Dept. at NTU	*Taipei, Taiwan*
2021	**3nd Prize**, Bachelor Thesis Award Electrical Engineering Dept. at NTU	*Taipei, Taiwan*
2021	**Most Popular Award**, Bachelor Thesis Award Electrical Engineering Dept. at NTU	*Taipei, Taiwan*
2022	**1st Prize & Most Popular Award**, Bachelor Thesis Award Electrical Engineering Dept. at NTU	*Taipei, Taiwan*
2022	**Presidential Award**, Electrical Engineering Dept. at NTU	*Taipei, Taiwan*

Skills

Programming	Node.js, Python, PyTorch, C++, LaTeX, Shell
Languages	Mandarin, English