

Yun-Ning (Amy) Hung

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biboamy



yun-ning-hung



<https://biboamy.github.io/>



Yun-Ning Hung

Education

M.S. in Music Technology, Georgia Institute of Technology, USA

Degree Expected 05/21

- Relevant courses: Audio Content Analysis, Machine Learning, Interactive Music

B.S. in Electrical Engineering, National Cheng Kung University (NCKU), Taiwan

2012 - 2016

UW-Madison Exchange Program, University of Wisconsin-Madison, USA

Fall 2015

- Relevant course: Software Engineering

Work Experience

Research Assistant at Georgia Institute of Technology

2019 - present

- Research on machine learning methods to automatically assess students' music performances.
- Implement a Siamese model to handle multiple input features for predicting regression output.

Research Assistant at Academia Sinica, the National Academy of Taiwan

2017 - 2019

- Conducted research on automatic music classification/auto-tagging, music transcription and music generation problems.
- Designed deep learning algorithms/models with Pytorch and Tensorflow. (See projects below)
- Presented at three conferences, several seminar talks, and one invited talk at the *6th Taiwanese Music and Audio Computing workshop*.

Industrial Collaboration with KKBOX Inc, the largest online music streaming company in Taiwan

2017 - 2019

- Collaborated with KKBOX's machine learning team to work on two projects: music recommendation [5] and AI music creation.
- Musical data analysis by using Python framework (numpy, scikit-learn, Matplotlib, etc).
- Provided technical report and participated in group brainstorming in a weekly basis.
- Improved music classification results (F-score) by more than 5%, resulting in more efficient

Software Engineer Intern at Amy.app, a New Zealand based online AI tutoring company

Summer 2019

- Researched on machine learning algorithm to generate efficient feedback and math questions.
- Implemented machine learning models by using Python and Pytorch to automatically solve junior and senior high school math questions.

App and Web Developer at Adv.Media, an Asia-based mobile application company

2016 - 2017

- Developed AR/VR applications and web platform for customers to display their products.
- Using Unity (C#), Android Studio (JAVA), and Xcode (Objective-C) to develop four applications, all of which were launched on both Google Play and the iOS App Store.
- Using PHP, SQL and Javascript to develop a web platform for managing user database.

Publications

Peer-reviewed Publications

- [1] **Hung, Y. N.**, Chiang, I., Chen, Y. A., & Yang, Y. H., Musical Composition Style Transfer via Disentangled Timbre Representations. International Joint Conferences on Artificial Intelligence (**IJCAI**), 2019 (*17% acceptance rate*)
- [2] **Hung, Y. N.**, Chen, Y. A., & Yang, Y. H., Multitask learning for frame-level instrument recognition. IEEE Int. Conf. Acoustics, Speech and Signal Processing (**ICASSP**), 2019.
- [3] **Hung, Y. N.**, & Yang, Y. H., Frame-level Instrument Recognition by Timbre and Pitch. International Society for Music Information Retrieval Conference (**ISMIR**), 2018

Other Publications

- [4] **Hung, Y. N.**, Chen, Y. A., & Yang, Y. H., Learning Disentangled Representations for Timber and Pitch in Music Audio, arXiv preprint arXiv: 1811.03271, Nov. 2018.
- [5] Yu, L. C., Yang, Y. H., **Hung, Y. N.**, & Chen, Y. A., Hit Song Prediction for Pop Music by Siamese CNN with Ranking Loss, arXiv preprint arXiv: 1710.10814, Oct. 2017.

Project

- Musical instrument recognition** [1] [2] (<https://github.com/biboamy/instrument-streaming>) 2017 - 2019
Advised by Dr. Yi-Hsuan Yang, Academia Sinica. Cooperated with KKBOX Inc.
- Designed new model architecture to recognize instruments types and usage timing in music pieces.
 - Proposed two deep learning models with multitask structure and harmonic-aware structure respectively, which improve the result (F-score) by 4%. Built by using Pytorch and Tensorflow.
 - Derived a large-scale synthesized dataset to address the small dataset issue.
- Music Generation** [3] [4] (<https://github.com/biboamy/instrument-disentangle>) 2017 - 2019
Advised by Dr. Yi-Hsuan Yang, Academia Sinica. Cooperated with KKBOX Inc.
- Design deep learning architecture to generate music in different styles.
 - Proposed two encoder-decoder models with adversarial training to disentangle musical features in high dimensional latent space. Built by Pytorch.
 - First model to realize musical instrumentation style transfer by using disentangled features.
- BadgerScale** (<https://biboamy.github.io/collection.html>) 2015 Fall
Project done in course “Software Engineering” given by Prof. Peter Ohmann at UW Madison
- Built an application for students to sell or buy sport tickets.
 - Developed application front-end by using Ionic framework.
- Homework Discussion Social Media** (<https://biboamy.github.io/collection.html>) 2014 Spring
Project done in course “Web Programming” given by Prof. Chang Tien-Hao at NCKU
- Built a social media platform for students to exchange their notes, homework or publications
 - Developed user-interface by using Javascript, HTML and CSS.

Awards

- WIMIR Travel Grant**, International Society for Music Information Retrieval Conference 2018
- Study Abroad Scholarship**, Electrical Engineering Department, National Cheng Kung University Fall 2015
- Honorable Mention**, Campus App Creativity Competition, National Cheng Kung University Spring 2015
- Academic Excellence Award** (Top 10% students in the department), National Cheng Kung University 2013 - 2014
- Academic Excellence Award**, Taipei Association of Medical Technologists 2012 - 2016

Technical Skills

Web & Applications	HTML, Javascript, CSS, Ionic, Typescript, PHP, SQL, Unity, Java, Object-C
Machine Learning	Python, PyTorch, TensorFlow
Others	Git, Linux. Latex
Language	Mandarin Chinese (native speaker), English (fluent), Spanish (entry-level)
Instrument	Guitar (7 years), Piano (10 years), Flute (1 year)

Leadership

- Student Startup** 2015 - 2016
- Co-organized two student startup companies for creating education software and tourist platform.
 - Developed responsive web and application platforms for the organizations.
- Tutor and Mentor** 2014 - 2016
- As a personal science and mathematic academic coach for junior and senior high students.
 - Student ambassador and Chinese tutor, Chinese Language Center, NCKU.
 - Guitar club mentor at Tzu Chi Senior High School.
- Vice president**, National Cheng Kung University Guitar Club 2014 - 2015
- Led an organization of 100+ people and co-organized several campus-wise musical events with 500+ audience.