

Lang-Chi Yu

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Education

National Taiwan University

M.S. IN COMMUNICATION ENGINEERING

Taipei, Taiwan

Sep. 2015 -- Jun. 2017

B.S. IN ELECTRICAL ENGINEERING

Sep. 2010 -- Jun. 2014

- Master's thesis: Abstractive Headline Generation for Spoken Documents with ASR Error Modeling
- GPA: 4.01/4.3 (Major), 3.87/4.3 (B.S.)

Research Interests

Machine Learning; Information Retrieval; Automatic Summarization; Hit Song Prediction and Generation

Publications

Lang-Chi Yu, Yi-Hsuan Yang, Yun-Ning Hung, and Yi-An Chen, "Hit Song Prediction for Pop Music by Siamese CNN with Ranking Loss," *arXiv preprint arXiv:1710.10814* (2017), submitted to *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2018.

Lang-Chi Yu, Hung-yi Lee, and Lin-shan Lee, "Abstractive Headline Generation for Spoken Content by Attentive Recurrent Neural Networks with ASR Error Modeling," *IEEE Workshop on Spoken Language Technology*, Dec. 2016.

Sz-Rung Shiang, Po-Wei Chou, and **Lang-Chi Yu, "Spoken Term Detection and Spoken Content Retrieval: Evaluations on NTCIR 11 Spoken-Query&Doc Task,"** in *Proceedings of the 11th NTCIR Conference*, 2014, pp. 371–375.

Research Experience

Hit Song Prediction for Pop Music

Aug. 2017 — Present

ADVISOR: DR. YI-HSUAN YANG, MUSIC AND AUDIO COMPUTING LABORATORY, ACADEMIA SINICA

- Propose multi-objective Siamese CNN model to jointly learn both hit scores and relative ranking of songs from primitive audio features
- Devise two Siamese pair sampling methods to overcome data-specific problems, e.g., A/B sampling alleviates data imbalance problem in KKBOX (a Taiwanese music streaming service company) dataset
- Observe that proposed model outperforms previous works that treated hit song prediction as a regression or classification problem

Abstractive Headline Generation for Speech with ASR Error Modeling

Apr. 2016 — Jun. 2017

ADVISOR: PROF. LIN-SHAN LEE, SPEECH PROCESSING AND MACHINE LEARNING LABORATORY, NTU

- Proposed novel attentive RNN architecture incorporating ASR error modeling mechanism that enabled spoken content headline generation model to learn from abundant text data and little ASR data
- Generated the finding that proposed architecture outperformed RNN and ARNN models that were trained on pure text data

NTCIR-11 SpokenQuery&Doc Task

Sep. 2013 -- Jun. 2014

ADVISOR: PROF. LIN-SHAN LEE, SPEECH PROCESSING AND MACHINE LEARNING LABORATORY, NTU

- Tackled general problem of open-vocabulary retrieval with variable-length queries in Spoken Term Detection task by considering acoustic feature similarity between utterances over both word and sub-word lattices
- Improved relevance of first-pass retrieval in Spoken Content Retrieval task by using Rocchio Algorithm, query expansion with RNNLM, and lecture slide similarity feedback with random walk

Work Experience

Research Assistant (Full-time)

Taipei, Taiwan

ACADEMIA SINICA

Aug. 2017 -- Present

- Develop novel approaches for hit song generation by utilizing successful models in hit song prediction and analysis (in collaboration with KKBOX Inc.)

Software Engineer Intern (Part-time)

Taipei, Taiwan

KKBOX INC.

Aug. 2017 -- Present

- Design accurate and applicable hit song prediction models for pop music

Teaching Assistant

Taipei, Taiwan

GRADUATE INSTITUTE OF COMMUNICATION ENGINEERING, NATIONAL TAIWAN UNIVERSITY

Sep. 2015 -- Jan. 2017

- Led four students in their Undergraduate Special Project on Summarization and Spoken Dialogue System

Platoon Leader, Second Lieutenant

COMPULSORY MILITARY SERVICE, TAIWAN COAST GUARD

Yunlin, Taiwan
Aug. 2014 -- Jul. 2015

Web Developer (Part-time)

DEPARTMENT OF ELECTRICAL ENGINEERING, NATIONAL TAIWAN UNIVERSITY

Taipei, Taiwan
Mar. 2013 -- Sep. 2013

- Developed PaGamO, the world's first MOOC-based multi-student gaming platform for course on Coursera
- Participated in PaGamO framework design
- Participated in PaGamO website front-end design and development

Electrical Engineering Student Association Member

DEPARTMENT OF ELECTRICAL ENGINEERING, NATIONAL TAIWAN UNIVERSITY

Taipei, Taiwan
Feb. 2012 -- Jun. 2014

- Assisted academic affairs in Electrical Engineering Department, e.g., departmental course registration, orientation, and textbook ordering services

Honors & Awards

Advanced Speech Technologies Scholarship

Oct. 2016

GRADUATE INSTITUTE OF COMMUNICATION ENGINEERING, NATIONAL TAIWAN UNIVERSITY

- Received the competitive scholarship that awarded US \$16,000 for three recipients for the year

Bronze Medal

Sep. 2013

ALTERA INNOVATE ASIA FPGA DESIGN COMPETITION

- Implemented FPGA-optimized SAD algorithm on DE2-115 to detect user's gestures
- Designed and built a USB interface between FPGA board and personal computer for users to directly control the cursor via sensors of the FPGA

Presidential Award

Oct. 2012

DEPARTMENT OF ELECTRICAL ENGINEERING, NATIONAL TAIWAN UNIVERSITY

- Ranked in top 5% of class in previous semester

Selected Course Projects

Campus Events Manager

Fall 2014

NETWORK AND MULTIMEDIA LAB

- Designed and built Android application with web client to search, manage, import, export, and display upcoming events in user-friendly format (e.g., calendar or map)

Cheat: How AI Lies and Responds to Lies

Fall 2013

ARTIFICIAL INTELLIGENCE

- Designed reinforcement learning agents for "Cheat" card game to examine how intelligent agents change strategies given opponent behavior in highly-untrusted environments

Turing Machine from Google Doodle

Fall 2013

EMBEDDED SYSTEM LAB

- Implemented Turing Machine, a mini-game from Google Doodle, with ARM Cortex-M4 microprocessor and Arduino Uno microcontroller board

Skills

Programming	Python, JavaScript, Lua, C/C++, JAVA, Android, MATLAB, TeX
Machine Learning	Kaldi, Torch, Theano, TensorFlow
Web Development	Django, Node.js, React.js, Semantic-UI, MySQL, MongoDB
Languages	Mandarin Chinese (native), English (proficient), Japanese (conversant), Taiwanese Hokkien (basic knowledge)

Standardized Test Scores

TOEFL iBT	Total 102 / Reading 30 / Listening 27 / Speaking 22 / Writing 23	Sep. 2016
GRE revised general test	Verbal 157 / Quantitative 170 / Analytical Writing 3.0	Feb. 2014