Sheng-Syun Shen

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Education

Master of Science, *National Taiwan University* — Sep. 2014 to Jun. 2016
- Speech Processing and Machine Learning Laboratory, Advisor: Lin-Shan Lee
- Thesis: More Efficient Learning by Structuring, Classifying and Understanding Lectures in Online Courses

Bachelor of Science, *National Taiwan University* — Sep. 2010 to Jun. 2014
- Relevant Coursework: Introduction to Digital Speech Processing(A+), Data Structure and Programming(A+)

Research Interests

Natural Language Processing, Speech Processing, Machine Learning, Information Retrieval, Question Answering

Publications

[1] Bo-Hsiang Tseng, Sheng-Syun Shen, Hung-Yi Lee, and Lin-Shan Lee, **"Towards Machine Comprehension of Spoken Content: Initial TOEFL Listening Comprehension Test by Machine,"** in *Proc. Interspeech, San Francisco, USA, September 2016.* [pdf]

[2] Sheng-Syun Shen and Hung-Yi Lee, **"Neural Attention Models for Sequence Classification: Analysis and Application to Key Term Extraction and Dialogue Act Detection,"** in *Proc. Interspeech, San Francisco, USA, September 2016.* [pdf]

[3] Sheng-Syun Shen, Hung-Yi Lee, Shang-Wen Li, Victor Zue, and Lin-Shan Lee, **"Structuring Lectures in Massive Open Online Courses (MOOCs) for Efficient Learning by Linking Similar Sections and Predicting Prerequisite,"** in *Proc. Interspeech, Dresden, Germany, September 2015.* [pdf]

[4] Han Lu, Sheng-Syun Shen, Sz-Rung Shiang, Hung-Yi Lee, and Lin-Shan Lee, **"Alignment of Spoken Utterances with Slide Content for Easier Learning with Recorded Lectures using Structured Support Vector Machine (SVM),"** in *Proc. Interspeech, Singapore, September 2014.* [pdf]

Research Experiences

Speech Processing and Machine Learning Lab   Advisor: Prof. Lin Shan Lee — Sep. 2012 to Aug. 2016

Machine Comprehension on TOEFL Test [1]
- Proposed a multi-hop neural attention model for TOFEL listening comprehension test
- Designed a sentence-level attention mechanism to reduce the impact of recognition error on language understanding

Neural Attention Models for Sequence Classification [2]
- Proposed an innovative recurrent neural network architecture with an attention mechanism for sequence classification and achieved better performance in key term extraction and dialogue act classification than previous work
- Collected a new data set (~290,000 articles) from Stack Overflow for key term extraction

Online Learning - Lecture Linking and Prerequisite Prediction [3]
- Designed a system for organizing online courses by linking lectures with similar contents and reordering the lectures according to their prerequisite relationship
- Proposed a word embedding approach that extracts feature vectors from documents while preserving the hypernym information by incorporating Wordnet database

Online Learning - Slide and Lecture Alignment [4]
- Built a system to align audio and slides to help people learn by video more efficiently
- Exploited global structure information using structured support vector machine (SSVM) to achieve a 5.25% improvement in alignment accuracies

Honors & Awards

ISCA Best Student Paper Awards Candidate, Interspeech 2016 [1]   Sep. 2016
- Only 12 nominees among about 800 papers

National Taiwan University Advanced Speech Technologies Scholarship   Sep. 2015
- For students with excellent performance in doing research related to speech technologies
- About 16000 USD/year

Selected Term Projects

Visual Question Answering	**Machine Learning and Having It Deep and Structured**
Information Retrieval on Chinese News Report	**Information Retrieval and Extraction**
Large Vocabulary Speech Recognition System	**Speech Processing Special Project**
Emoticon Prediction using Recurrent Neural Networks	**Natural Language Processing**
Implementation of Image Stitching and High Dynamic Range Techniques	**Digital Visual Effects**
Vehicle Detection using Faster Region-based Convolutional Neural Networks	**Pattern Recognition**
Handwritten Chinese Character Recognition based on Convolutional Neural Networks	**Machine Learning**
Friend Recommendation Systems using Matrix Factorization and Singular Value Decomposition	**Data Mining**

Working & Teaching Experiences

Civil Service, *Hsinchu District Prosecutors Office*   Aug. 2016 to present
- Assisted with administrative work in Hsinchu District Prosecutors Office

Research Assistant, *Speech Processing and Machine Learning Laboratory, NTU*   Sep. 2014 to Aug. 2016
- Focused on the research areas of spoken language understanding and applications of deep learning

Teaching Assistant, *Graduate Institute of Communication Engineering, NTU*

Course: Speech Processing Special Project   Feb. 2015 to Jun. 2016
- Mentored five undergraduate students to be familiar with the research area

Course: Machine Learning and Having It Deep and Structured   Feb. 2015 to Feb. 2016
- Designed and graded term-projects and final projects including "*Visual Question Answering*", "*Structure Learning for Phone Recognition*", and "*Large Vocabulary Speech Recognition System on TIMIT Corpus*"

Skills & Language Proficiency

Programming Languages	C, C++, Python, Matlab, UNIX shell script, HTML
Languages	English, Mandarin Chinese, Taiwanese

Leadership & Extracurricular Activities

Film Director, *Orange Glasses Studio*   Jun. 2012 to present
- Produced many micro movies including "*Preview*", "*Meteor, meet here*", and "*Phishing*"
- Also worked as a cameraman, film editor, sound effects editor, and VFX animator

Graphic Designer, *2016 Speech Signal Processing Workshop, Taiwan*   Jan. 2016 to Mar. 2016
- Designed the logo, poster, conference hall banner, t-shirts and all the other visual elements in the workshop

Director, *Marketing Department of NTU Graduation Prom*   Sep. 2013 to Jun. 2014
- Promoted the biggest prom in NTU (about 3000 participants)
- Managed the promotion materials, such as publicity photos, websites, and promotional videos

Director, *Activity Department of NTUEE Student Association*   Jul. 2012 to Jun. 2013
- Hosted over twenty activities, including sport games, music festivals, dramas, proms, talent shows, etc
- Participated in workshops with students and faculty from Peking University and Tongji University