

Yau-Shian Wang

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Research Interests

My research interests are machine learning and natural language processing. My previous research covers unsupervised text summarization, grammar induction on Transformers, and the multi-experts model for extreme multi-label text classification. In the future, I am open to a wide range of ML or NLP topics. One interesting topic to me is semi-supervised learning and transfer learning to tackle the data scarcity issue in NLP tasks.

Education

- **Carnegie Mellon University (CMU)**
 - M.S. in Master of Language Technologies (MLT) Expected June 2022
- **National Taiwan University (NTU)**
 - M.S. in Graduate Institute of Networking and Multimedia Dec 2019
 - B.S. in Computer Science and Information Engineering (CSIE) June 2017

Research Experiences

- **Extreme Multi-label Text Classification with Multi-layer Experts** **CMU, 2021-Now)**
Research Project (Advisor: Prof. Yiming Yang)
 - Propose a multiple experts model for extreme multi-label text classification, in which different experts leverage the representations from different Transformer layers and thus they can capture different semantic granularity of texts. ([Under submission of ACL](#)).
- **HS Code Classification** **CMU, 2021-Now)**
Flexport Project (Advisor: Prof. Yiming Yang)
 - Develop a machine learning system that can predict the Harmonized System (HS) Codes based on the product description. The main focus of this project is how to utilize HS code descriptions and how to leverage more texts crawled from the websites to augment the existing data and improve the system performance.
- **Unsupervised Parsing on Transformer** **CSIE, NTU (2019)**
Speech Processing and Machine learning Laboratory (Advisors: Prof. Hung-Yi Lee, Prof. Yun-Nung Chen)
 - Design a module in Transformer layers to automatically induce tree structures. Self-attention in Transformer is constrained to follow the induced structures. To optimize masked-LM, the module learns reasonable structures to guide the self-attention encoding more meaningful representations. ([Publication \[1\]](#))
- **Unsupervised Text Classification** **CSIE, NTU (2018-2019)**
Speech Processing and Machine learning Laboratory (Advisors: Prof. Hung-Yi Lee, Prof. Yun-Nung Chen)
 - Propose several extensions for utilizing Info-GAN on textual data. The proposed method achieves good performance on unsupervised text classification and learns interpretable topics. ([Publication \[3\]](#))
- **Unsupervised Text Summarization** **CSIE, NTU (2016-2017)**
Speech Processing and Machine learning Laboratory (Advisors: Prof. Hung-Yi Lee, Prof. Lin-shan Lee)
 - Unsupervised text summarization is achieved by using a human-written summary as latent representations of an adversarial autoencoder. ([Publication \[2\]](#))
- **Unsupervised Text Sentiment Transfer** **CSIE, NTU (2017)**
Speech Processing and Machine learning Laboratory (Advisors: Prof. Hung-Yi Lee, Prof. Lin-shan Lee)
 - Unsupervised text sentiment transfer by using CycleGAN to modify some dimensions of pre-trained word embeddings containing sentiment information. ([Publication \[4\]](#))
- **Multi-Source Sales Prediction** **Academia Sinica (Summer intern, 2016)**
Academia Sinica (Advisor: Prof. Hong-Han Shuai)
 - Utilize machine learning methods for multi-source sales prediction. ([Publications \[5\]](#))

Publications

- [1] Yau-Shian Wang, Hung-Yi Lee, Yun-Nung Chen, "Tree Transformer: Integrating Tree Structures into Self-Attention", *EMNLP 2019*, [\[paper link\]](#) , [\[code\]](#)
- [2] Yau-Shian Wang, Hung-Yi Lee, "Learning to Encode Text as Human-Readable Summaries using Generative Adversarial Networks", *EMNLP 2018*, [\[paper link\]](#), [\[code\]](#)
- [3] Yau-Shian Wang, Hung-Yi Lee, Yun-Nung Chen, "Learning Interpretable and Discrete Representations with Adversarial Training for Unsupervised Text Classification", [\[paper link\]](#)
- [4] Chih-Wei Lee, Yau-Shian Wang, Tsung-Yuan Hsu, Kuan-Yu Chen, Hung-Yi Lee, Lin-shan Lee, "Scalable sentiment for sequence-to-sequence chatbot response with performance analysis", *ICASSP 2018*, [\[paper link\]](#) [\[code\]](#)
- [5] Kun-Han Tsai, Yau-Shian Wang, Hsuan-Yu Kuo, Jui-Yi Tsai, Ching-Chih Chang, Yi-Chun Chen, Hui-Ju Hung, Hong-Han Shuai, "Multi-Source Learning for Sales Prediction", *TAAI 2017 best paper*, [\[paper link\]](#)

Teaching Experiences

- **Teaching Assistant** (CSIE and EE, NTU)
Applied Deep Learning (Instructor: Yun-Nung Chen); *Machine Learning and Having it Deep and Structured* (Instructor: Hung-Yi Lee); *Machine Learning* (Instructor: Hung-Yi Lee)
- **Teaching Assistant** (LTI, CMU)
Machine Learning for Text and Graph-based Mining (Instructor: Yiming Yang)

Skills

- **Programming Languages:** C/C++, java, python.
- **Toolkit:** pytorch, tensorflow, sklearn.