Zetian (Neal) Wu

+1-(443)-630-2430 | zwu49@jhu.edu | neal-ztwu.github.io

Education

Johns Hopkins University — MD, United States
MSE in Data Science — *Jan. 2020 – present*

Zhejiang University — Zhejiang, China
BS in Physics | Minor in Finance — *Sept. 2015 – Jun. 2019*

Research Experience

Research Assistant — Apr. 2020 – present
Center for Language and Speech Processing — *Johns Hopkins University, United States*

What is the Fact of Shap Value for NLP Models? *(In progress)*

MULTIBENCH: Multiscale Benchmarks for Multimodal Representation Learning *(Draft for NeurIPS Benchmark 2021)*

Lexicon Creation for Interpretable NLP Models *(Under review by EMNLP 2021)*

Span Identification and Representation for Information Extraction

- Formulated entity mention detection problem under partially annotated datasets as a span ranking task, where a dedicated ranking loss is enforced to rank gold spans higher while not fully ablating unlabelled spans.
- Built an LSTM-based model to detect spans by conditioning on given spans, supporting extraction tasks such as event extraction.
- Investigated taking the SpanBERT-based coreference model as span proposal model to detect entity mentions, achieving recall above 0.9 and F1 score above 0.8 when finetuned with only a few training examples.

Research Assistant — Apr. 2018 – Aug. 2019
Intelligent Computing & System Lab — *Zhejiang University, China*

Anti-fraud Model for New Financial Leasing Services

- Constructed two kinds of features: one is obtained from Bipartite Graph as statistical features and the other is extracted from Unipartite Graph using DeepWalk model as node embeddings.
- Built supervised learning model (DeepFM) using Baidu's PaddlePaddle framework, increasing the anti-fraud ability of the new financial leasing services by 6% on AUC

Interactive Rare-Category-of-Interest Mining from Large Datasets *(AAAI 2020)*

- Built a web crawler for data collecting and a CNN-based feature extractor to construct a real audio dataset (Birdcall) along with a numerical dataset (Medicine) for performance evaluation.
- Implemented a Rare Category Detection (RCD) model using a combined method of offline phase inference and high-level knowledge abstractions, reducing the time complexity of query answering from quadratic to logarithmic.
- Implemented a Rare Category Exploration (RCE) model using a collaborative-reconstruction based approach, and compared our model with baseline algorithms including kNN, Interleave, NNDM, Clover, and FRANK, resulting in at least 11.75% improvement in accuracy.

Work Experience

Machine Learning Engineer — Aug. 2019 – Mar. 2020
Hangzhou Enjoymusic Technology Co. Ltd. — *China*

- Built a sequence-to-sequence model for music style transferring using TransformerXL and Discriminator.
- Formulated automatic music piece generation problem as a conditional sequence generation task that decodes MIDI sequence from drum beats, and modelled with VAE architecture.
- Refactored Typescript Midi-me(https://magenta.tensorflow.org/midi-me) codes using Python for integration with our own platform and application.

Skills and Additional Information

Programming/Framework: Python, PyTorch, TensorFlow, AllenNLP, Linux, C/C++, MATLAB, R, SQL
Awards: Top Prize in China Collegiate Computing Contest-AI Innovation Contest, Honorable Award in COMAP
Honors: Outstanding Cadre of Communist Youth League of China, 2nd Level in Training Plan of the National Basic Subject Top-notch Talent Scholarship