Ting-Wei Wu

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Looking for Research/Software Engineering Internship Position *Interests: ML & DL*

Education

Georgia Institute of Technology Atlanta, GA
Ph.D. in Machine Learning; GPA: 3.83 *Aug. 2019 - now*

University of California, Berkeley Berkeley, CA
M.Eng. in Bioengineering; GPA: 3.83 *Aug. 2017 – May. 2018*

National Taiwan University Taipei, Taiwan
B.S. & M.S. in Electrical Engineering; GPA: B.S. 3.82 (3.93/4.3); M.S. 4.00 (4.22/4.3) *Sep. 2012 – Jul. 2017*

Skills

Languages: Python, Matlab, C++, SQL, Verilog, VBA, Java
Technologies: Data Science, Docker, Pyspark, Flask, AWS, AutoCAD, 3ds Max, Photoshop, COMSOL, Microfabrication
Coursera Certificates: Advanced ML (DL, Bayesian, RL, NLP), Deep Learning Specialization, Machine Learning

Professional Experience

- **Machine Learning Research Intern, VMware Inc.** Palo Alto, CA
  Storage IO & Performance Analytics in Natural Language Processing, ML & AI *May. - Nov. 2020*
  - Causality Extraction: Introduced a new two-stream multihead self-attention mechanism in BiLSTM-CRF model on causality inference and pairing within paragraphs which created new benchmark F1 score 0.74 on VMware internal datasets.
  - Knowledge Graph: Established an end-to-end nlp pipeline for inter/intra sentence causal information retrieval to extract 2300 useful causal relations out of 20000 problem requests within seconds to construct knowledge network for troubleshoot diagnosis.
  - Few-shot Learning: Devised ProtoNet structure in causal tagging scheme to leverage few labeled data boosting F1 by 11%.
- **Graduate Lab Researcher, advised by Prof. Biing-Huang Juang at Gatech** Atlanta, GA
  Task-oriented speech dialogue system with multi-intent recognition *Aug. 2019 - now*
  - Intent clustering: Developed surface-pertinence model framework with BERT pretrained feature extractor for utterance-level embeddings and unsupervised deep semantic identifier to extract attention-based intent information and perform clustering.
  - Dialogue intent tracking: Fine-tuned modified BERT on new next-sentence prediction of MultiWOZ dialogue datasets for detecting intent transition states within dialogues and clustering multi-intent in user queries.

Highlighted Projects

- **Machine Translation Quality Estimation** *Natural Language Processing*
  Deep Learning Research Course Project advised by Facebook AI *Jan.-May. 2020*
  - QE: Exploited predictor-estimator model with ensembling to perform transfer learning on few quality-labeled translation data.
- **Cellspectra: unsupervised cell image segmentation** *Computer Vision*
  Graduate Lab Researcher advised by Prof. Peng Qiu at Gatech *Jan.-May. 2020*
  - Bacterial segmentation: Developed CNN-based unsupervised object segmentation modules for cell counting and tracking.
  - Raman spectra clustering: Exploited deep embedding clustering on raman vectors from 1-d autoencoder for segmentation.
- **StackBoxer: chatroom with bilingual AI chatbots - *https://chatbox.cc*** *Natural Language Processing*
  Full-stack Project in developing functional and trained chatbots in online chatroom interface *Jan.-Mar. 2019*
  - StackBot: Modeled intent classifier with tfidf features and Starspace embedding for similarity scoring on Stackoverflow queries.
  - Movie Bot, ChickBot, YourFbBot: A customized 2-layer seq2seq model with attention mechanism and self-designed reward mechanism with polcy gradient reinforcement set up in Django+Docker+nginx backend environment.
- **DeepEyeNet: Image Captioning with keyword-driven report generation** *Image Captioning & NLP*
  Research Project collaborated with Gatech, UvA, KAUST *Feb.-Nov. 2019*
  - Dataset Preparation and evaluator: Prepared 15,709 images annotated by experienced ophthalmologists and designed a new evaluator and measure for our caption generator jointly in adversarial training. Work published in **WACV 2021**.
  - Transfuser: Devised new image-keyword self-attention embedding algorithms for keyword-driven image captioning model. The performance increases about 35% in BLEU-avg and 155% in CIDEr than baseline models. Work submitted to AAAI 2021.
- **PillNet: A pill recognition search tool in mobile device** *Computer Vision*
  FITI Entrepreneurship Startup Team supported by Ministry of Science and Technology in Taiwan *Apr.-Jul. 2019*
  - SSD-MobileNet & Siamese Network: Developed pharmaceutical pill identification module in real-time mobile camera by a designed siamese network trained with fda pill image database and tensorflow object detection module.

Other cs-related projects:
Chinese lyrics generation with charRNN, Fire event database management with selenium, pandas, SQL, Malaria cell prediction with pytorch, Integrated cell-sorting sensor system with ML clustering for impedance data in NTU and UC Berkeley (**ACS Sensors, MicroTAS '17, IEEE NEMS '17, IMCS '16**.), Intelligent Baby Monitoring System (R&D Intern at Getac.)