Chien-Sheng (Jason) **Wu**

Machine Learning · Natural Language Processing

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Research Interests

My research interests are Machine Learning and its applications in Natural Language Processing. My recent works have focused on dialogue systems, fact checking, affective computing, and human-robot interactions. More broadly, I am interested in developing trustworthy and empathetic machines that are able to interact with people and make their lives better.

Education

MPhil, Hong Kong University of Science and Technology (HKUST), Hong Kong 2017-2019

- Electronic Computer Engineering & Center of AI Research
- Advisor: Prof. Pascale Fung

Bachelor, National Taiwan University (NTU), Taipei, Taiwan 2012-2016

- Electrical Engineering
- GPA Overall: 3.94/4.30 Last 60: 4.05/4.30

Research Experience

Salesforce Research, California, USA Aug - Dec 2018

- Deep Learning Intern (Advisor: Dr. Caiming Xiong & Dr. Richard Socher)
- Proposed transferable dialogue state generator for multi-domain dialogue state tracking. **[ACL]**
- Proposed global-to-local memory pointer networks for dialogue response generation. **[ICLR]**

Center of AI Research (CAiRE), HKUST, Hong Kong 2017 - present

- Graduate Researcher (Advisor: Prof. Pascale Fung)
- Used neural ranker and lexical tags to improve large-scale fact-checking **[EMNLP]**
- Proposed memory-to-sequence dialogue systems to incorporate knowledge bases. **[ACL]**
- Proposed dynamic query memory network for system response retrieval. **[ICASSP]**
- Won second prize in Dialogue System Technology Challenges 2017. **[DSTC]**

Human Language Technology Center (HLTC), HKUST, Hong Kong 2016

- Research Assistant (Advisor: Prof. Pascale Fung)
- Collaborated in building virtual empathetic android, Zara the Supergirl. **[COLING]**
- Improved real-time speech emotion recognition and sentiment analysis. **[EMNLP]**

Automation Laboratory, Academia Sinica, Taiwan 2016

- Research Assistant (Advisor: Dr. Jing-Sin Liu)
- Conducted comparative study on Bezier lane-change curves for unicycle robots. **[IEEE ROBIO]**

Access IC Lab, NTU, Taiwan 2014 - 2015

- Research Assistant (Advisor: Prof. An-Yeu Andy Wu)
- Proposed hybrid precoding strategy using DFT matrix and k-means algorithm. **[IEEE ICSPCC]**

Publications (* Equal Contribution)

1. "Transferable Multi-Domain State Generator for Task-Oriented Dialogue Systems," **Chien-Sheng Wu**, A Madotto, E Hosseini-Asl, C Xiong, R Socher, P Fung, *ACL* 2019 (long).
2. "Personalizing Dialogue Agents via Meta-Learning," A Madotto, Z Lin, **Chien-Sheng Wu**, P Fung, *ACL* 2019 (short).
3. "Global-to-local Memory Pointer Networks for Task-Oriented Dialogue," **Chien-Sheng Wu**, C Xiong, R Socher, *NeurIPS ConvAI* 2018 (oral) & *ICLR* 2019.

4. “Improving Large-Scale Fact-Checking using Decomposable Attention Models and Lexical Tagging,” **Chien-Sheng Wu***, N Lee*, P Fung, *EMNLP* 2018 (short).
5. “Mem2Seq: Effectively Incorporating Knowledge Bases into End-to-End Task-Oriented Dialog Systems,” **Chien-Sheng Wu***, A Madotto*, P Fung, *ACL* 2018 (long).
6. “End-to-End Dynamic Query Memory Network for Entity-Value Independent Task-Oriented Dialog,” **Chien-Sheng Wu**, A Madotto, G Winata, P Fung, *IEEE ICASSP* 2018.
7. “Empathetic Dialog Systems,” P Fung, D Bertero, P Xu, JH Park, **Chien-Sheng Wu**, A Madotto, *LREC* 2018.
8. “End-to-End Recurrent Entity Network for Entity-Value Independent Goal-Oriented Dialog Learning,” **Chien-Sheng Wu***, A Madotto*, G Winata, P Fung, *DSTC* 2017.
9. “Real-Time Speech Emotion and Sentiment Recognition for Interactive Dialogue Systems,” D Bertero, F Siddique, **Chien-Sheng Wu**, Y Wan, R Chan and P Fung, *EMNLP* 2016 (short).
10. “Towards Empathetic Human-Robot Interactions,” P Fung, D Bertero, Y Wan, A Dey, R Chan, F Siddique, Y Yang, **Chien-Sheng Wu**, R Lin, *CICLing* 2016.
11. “Zara: A Virtual Interactive Dialogue System Incorporating Emotion, Sentiment and Personality Recognition,” P Fung, A Dey, F Siddique, R Lin, Y Yang, D Bertero, W Yan, **Chien-Sheng Wu**, *COLING* 2016.
12. “Emo2Vec: Learning Generalized Emotion Representation by Multi-task Training,” P Xu, A Madotto, **Chien-Sheng Wu**, JH Park, P Fung, *EMNLP WASSA* 2018.
13. “Bilingual Character Representation for Efficiently Addressing Out-of-Vocabulary Words in Code-Switching Named Entity Recognition,” G Winata, **Chien-Sheng Wu**, A Madotto, P Fung, *ACL CS Workshop* 2018.
14. “Joint RF/Baseband Grouping-based Codebook Design for Hybrid Beamforming in mmWave MIMO Systems,” **Chien-Sheng Wu**, CH Chen, CR Tsai, and AY Wu, *IEEE ICSPCC* 2016.
15. “Simulations for Time-Optimal Trajectory Planning along Parametric Polynomial Lane-Change Curves for a Unicycle,” **Chien-Sheng Wu**, ZY Chiu, JS Liu, *IEEE ROBIO* 2017.

Honors & Awards

Postgraduate Studentship, Electronic & Computer Engineering, HKUST — 2017, 2018

Dean’s List Award, School of Engineer, HKUST — Spring 2016

Irving T. Ho Memorial Scholarship, Electrical Engineering & Computer Science, NTU — 2016
- Awarded to 3 undergraduates for outstanding academic performance.

Best Student Paper Award, IEEE ICSPCC — Aug 2016

First Place, Hackathon, Microsoft Research Asia — Aug 2015
- Won among 34 universities across China, Taiwan, and Hong Kong.

Work & Leadership

Teaching Assistant, HKUST — Spring 2018, 2019
- Building Interactive Intelligent Systems (comp4901I / elec4010I)

Activity Director, NTUEE Student Association — Sep 2014 - Sep 2015
- Lead 50+ students to organize 10+ activities for 1000+ NTUEE students

Selected Projects

Embedded System & Web Programming, NTUEE — Fall 2016
- An interactive boxing game using Raspberry Pi, Arduino and 6-DOF sensors. [demo]
- A visualization platform retrieving the referred and cited academic papers. [demo]

Deep and Structured Machine Learning, NTUEE — Fall 2015

- Automatic speech recognition (ASR) systems using DNN-HMM, CRF, and RNN.
- Visual question answering (VQA) using CNN, word embeddings and random forest.

Skills & Languages

- PyTorch, TensorFlow, Keras, Theano, Scikit-learn, Caffe, LibSVM
- Python (familiar), C++ (familiar), MATLAB (familiar), JavaScript, Verilog, LaTeX
- English (Fluent), Mandarin (Native)