# BIN WANG

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## PARTICULARS

### EDUCATION

University of Southern California — Los Angeles, USA
PhD in Electrical Engineering — *Aug. 2017 - Mar. 2021*
Advisor: C.-C. Jay Kuo

University of Southern California — Los Angeles, USA
M.S. in Electrical Engineering — *Aug. 2017 - May. 2019*

University of Electronic Science and Technology of China (UESTC) — Chengdu, China
B.Eng. in Electronic Information Engineering — *Sep. 2013 - June 2017*
Advisor: Jin Qi; Rank: 2/351

City University of Hong Kong — Hong Kong
Exchange Student in Electrical and Electronics Engineering — *Sep. 2015 - Jan. 2016*
GPA: 4.3/4.3

### RESEARCH INTERESTS

My research interests span the areas of natural language processing and machine learning. I have a specific interest in representation learning of words, sentences, and knowledge graphs.

## PUBLICATIONS

### PEER-REVIEWED PAPERS

1. Bin Wang, Guangtao Wang, Jing Huang, Jiaxuan You, Jure Leskovec and C.-C. Jay Kuo, "Inductive Learning on Commonsense Knowledge Graph Completion", *International Joint Conference on Neural Networks (IJCNN)*, 2021.
2. Bin Wang, C.-C. Jay Kuo, "SBERT-WK: A Sentence Embedding Method by Dissecting BERT-based Word Models", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 2020.
3. Bin Wang, Fenxiao Chen, Yun-Cheng Wang, and C.-C. Jay Kuo, "Efficient Sentence Embedding via Semantic Subspace Analysis", *International Conference on Pattern Recognition (ICPR)*, 2020.
4. Fenxiao Chen, Yun-Cheng Wang, Bin Wang and C.-C. Jay Kuo, "Graph Representation Learning: A Survey", *APSIPA Transactions on Signal and Information Processing*, 2020.
5. Bin Wang*, Angela Wang*, Fenxiao Chen, Yun-Cheng Wang, and C.-C. Jay Kuo, "Evaluating Word Embedding Models: Methods and Experimental Results", *APSIPA Transactions on Signal and Information Processing*, 2019.
6. Bin Wang, Fenxiao Chen, Angela Wang, and C.-C. Jay Kuo, "Post-Processing of Word Representations via Variance Normalization and Dynamic Embedding", *International Conference on Multimedia and Expo (ICME)*, 2019.
7. Yeji Shen, Yuhang Song, Hanhan Li, Shahab Kamali, Bin Wang and C.-C. Jay Kuo, "K-covers for active learning in image classification", *International Conference on Multimedia and Expo (ICME) Workshop*, 2019.
8. Fenxiao Chen, Bin Wang and C.-C. Jay Kuo, "Deepwalk-assisted Graph PCA (DGPCA) for language networks", *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2019.
9. Bin Wang, Yunze Li, Haoxiang Lang and Ying Wang, "Hand gesture recognition and motion estimation using the Kinect Sensor", *Mechatronic Systems and Control*, 2019.
10. Fenxiao Chen, Bin Wang, and C.-C. Jay Kuo, "Graph-based Deep-Tree Recursive Neural Network (DTRNN) for Text Classification", *Spoken Language Technology Workshop (SLT)*, 2018

### PAPERS UNDER REVIEW OR PREPRINT

11. Xie Tian, Bin Wang, and C.-C. Jay Kuo. "GraphHop: An Enhanced Label Propagation Method for Node Classification", *IEEE Transactions on Neural Networks and Learning Systems (TNNLS) (Under Review)*, 2021.

## RESEARCH EXPERIENCE

- **Research Intern, JD AI Research,** May 2020 - Aug. 2020.
  *Supervisor: Guangtao Wang & Jing Huang*
  At JD AI Research, I am responsible for research the inductive learning problem on commonsense knowledge graph completion task which can be used in applications including knowledge-based question answering and chatbot agents. Specifically, I leverage text descriptions of entities using BERT and learn graph structural information with graph convolutional networks. Improvements on commonsense knowledge graph completion task is demonstrated in both transductive and inductive settings.
- **Research Assistant, University of Southern California,** July 2017 - Aug 2018.
  *Supervisor: Prof. C.-C. Jay Kuo*
  Our work focus on using modern machine learning tools to assist humans for aircraft maintenance scenes. More specifically, we would like to automatically extract video features and quickly identify potential danger for the aircraft engine video streams. I am responsible for design and implement techniques include video captioning and video summarization, where I built a deep learning model to learn inter-model (visual, language) translation and an unsupervised image processing pipeline to identify eventful frames. Besides, I also develop a video streaming module using WebRTC on Moverio BT-300 smart glasses for dynamically adjust video streaming qualities based on current network conditions.
- **Research Assistant, Univ. of Electronic Science and Technology of China,** Oct. 2016 - June 2017.
  *Supervisor: Prof. Jin Qi*
  This project focus on AI-assisted medical image processing. I worked on problems related to nuclei detection on breast cancer histopathology images. Due to data shortage for annotated breast cancer histopathology images, we first conduct data collection from publicly available datasets and data augmentation using image processing tools. For detection, a lightweight real-time detection framework with a convolutional neural network is proposed and optimized for our collected data.
- **Research Intern, Ontario Tech University,** July 2016 - Oct. 2016.
  *Supervisor: Prof. Haoxiang Lang*
  In this project, we focus on smart visual-enhanced robotics. I am responsible in developing visual understanding part to human gesture language from RGB-D image captured with Kinect sensors and integration with a real robotic model (Turtlebot). Based on our hand gesture recognition and motion estimation outputs, the robotic can perform pre-defined tasks with the integration of SLAM (Simultaneous Localization and Mapping) techniques.

## TEACHING & ADVISING

- Teaching Experience
  - **Teaching Assistant,** EE 599: Applied and Cloud Computing for Electrical Engineers, Brandon Franzke, Spring 2021, University of Southern California.
  - **Teaching Assistant,** EE 141L: Applied Linear Algebra for Engineering, Prof. Antonio Ortega, Fall 2020, Fall 2019, University of Southern California.
  - **Teaching Assistant,** EE 155L: Computer Programming for Electrical Engineers, Prof. Sandeep Gupta, Spring 2020, University of Southern California.
  - **Teaching Assistant,** EE 483: Digital Signal Processing, Prof. Richard Leahy, Robert Popoli, Spring 2019, Fall 2018, University of Southern California.
- Advisees
  - **Chengwei Wei,** Research on Natural Language Understanding. Fall 2020 - Spring 2021, University of Southern California.
  - **Angela Wang,** Research on Word Embedding Evaluation. Summer 2018, University of California, Berkeley.

## SERVICE

- Reviewer (Journals) - *IEEE/ACM Transaction on Acoustic, Speech and Language Processing, Natural Language Engineering, IEEE Access.*
- Reviewer (Conferences) - *NAACL 2021, ICME 2019/20/21, EMNLP 2020.*

## TECHNICAL EXPERIENCE

- Proficient: *Python, PyTorch, Matlab, LaTeX.*
- Intermediate: *C++, TensorFlow*
- GitHub: `https://github.com/BinWang28`.

## LANGUAGES

Proficient in English, Chinese.

## REFERENCES

Prof. C.-C. Jay Kuo
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