Zichang He

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Education

University of California, Santa Barbara (UCSB), CA, USA — Sep. 2018 – present

Pursing Ph.D. in *Electrical and Computer Engineering*, *GPA*: 3.92/4.0;

Northwestern Polytechnical University (NWPU), Xi'an, China — Sep. 2014 – Jun. 2018

B.Eng. in *Detection, Guidance and Control Technology*

Research Experiences

Uncertainty & Data Analysis Lab at UCSB — Sep. 2018 – present

Graduate Research Assistant, Supervisor: Prof. Zheng Zhang

Research Interests: Uncertainty Quantification (UQ); Tensor/Matrix Computing; Machine learning

- Designed an efficient UQ framework for computer architecture based on mixed-integer programming: speed up 100x than Monte Carlo.
- Proposed a tensor regression model with rank determination for high-dimensional function approximation problems: complexity reduced from exponential to linear.
- Proposed an active learning framework for efficient undersampled MRI reconstruction: adaptive sampling in tensor-structure k-space data.
- **Current research** aims to develop general UQ and tensor data analysis techniques, combine them with machine learning algorithms.

Intelligent Information Processing Lab at NWPU — Sep. 2015 – Jun. 2018

Undergraduate Research Assistant, Supervisors: Prof. Wen Jiang & Prof. Yong Deng

Research interests: Uncertainty Analysis, Information Fusion, Quantum Decision Theory.

- Proposed evidential and quantum frameworks to model decision making process, which can explain lots of paradoxes in the classical probability theory.
- Proposed effective models to solve information fusion and decision making problems under epistemic uncertainty.

The Hong Kong Polytechnic University — Jul. 2017 – Aug. 2017

Summer Research Intern, Supervisor: Prof. Felix T.S. Chan

Publications [Google Scholar]

- **He, Z.** and Zhang, Z., Compact Tensor regression for uncertainty quantification. (In preparation)
- **He, Z.** and Zhang, Z., Active Tensor Completion for High-dimensional MRI Reconstruction. (Submitted)
- **He, Z.**, Cui, W., Cui C., Sherwood, T. and Zhang, Z., Efficient uncertainty modeling for system design via mixed integer programming, *International Conf. Computer Aided Design (ICCAD)*, 8 pages, Westminster, CO, Nov. 2019. (Acceptance rate = 23.8%)
- **He, Z.** and Jiang, W., An evidential dynamical model to explain the interference effects of categorization on decision making results, *Knowledge-Based Systems*, 150 (2018): 139-149. (ESI Highly Cited Paper)
- **He, Z.** and Jiang, W., An evidential Markov decision making model, *Information Sciences*, 467 (2018): 357-372. (ESI Highly Cited Paper)
- **He, Z.** and Jiang, W., A new belief Markov chain model and its application in inventory prediction, *International Journal of Production Research*, 56 (2018): 2800-2817.

- **He, Z.**, Chan, Felix. T.S. and Jiang, W., A quantum framework for modelling subjectivity in multi-attribute group decision making, *Computers & Industrial Engineering*, 124 (2018): 560-572.
- **He, Z.**, Jiang, W. and Chan, Felix. T.S., Evidential supplier selection based on interval data fusion, *International Journal of Fuzzy Systems*, 20 (2018): 1159-1171.
- **He, Z.** and Jiang, W., Quantum mechanical approach to modelling reliability of sensor reports, *IEEE Sensors Letters*, 1 (2017): 1-4.
- Tang, Y., Zhou, D., **He, Z.** and Xu, S., An improved belief entropy-based uncertainty management approach for sensor data fusion, *International Journal of Distributed Sensor Networks*, 13(7) (2017): 1550147717718497.
- Tang, Y., Zhou, D., Xu, S. and **He, Z.**, A weighted belief entropy-based uncertainty measure for multi-sensor data fusion, *Sensors*, 17 (4) (2017): 928.
- Jiang, W., Cao, Y., Yang, L. and **He, Z.**, A Time-Space domain information fusion method for specific emitter identification based on Dempster-Shafer evidence theory, *Sensors* 17 (9) (2017): 1972.

Teaching & Talks

- Teaching assistant of *ECE 15A* (Foundations of Logic Design), UCSB — Winter 2020
- Teaching assistant of *ECE 139* (Probability & Statistics), UCSB — Spring 2019
- Conference talk on *ICCAD'19*, Westminster, CO, USA — Nov. 2019
- Conference talk on *8th China Information Fusion Conference*, Xi'an, China — Jul. 2017

Selected Honors & Awards

- The UCSB Graduate Fellowship in Department of ECE — 2018
- The NWPU Special Scholarship of Yajun Wu and Aviation Industry Corporation of China (top 3%) — 2016, 2017
- Meritorious Winner in Interdisciplinary Contest in Modeling (awarded by COMAP) — 2016

Others

Reviewer of journals: *Information Sciences*, *Science China: Information Sciences*, etc.
Graduate Courses: Linear Systems, Machine Learning, Optimal Estimation and Detection, Scientific Computing, Matrix & Tensor Analysis, Game Theory, etc.
Programming Skills: Matlab, Python, C, C++, Mathematica, Keil, LaTex, etc.