Zepeng Huo

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Education

Texas A&M University, College Station, TX — Jan 2018 - Present
- Ph.D, Computer Science
- Advisor: Dr. Bobak Mortazavi

Texas A&M University, College Station, TX — Sep 2015 - Dec 2017
- Master of Science, Computer Science
- Advisor: Dr. Xia (Ben) Hu

Jilin University, Changchun, China — Sep 2011 - Jun 2015
- Bachelor of Engineering, Electrical Engineering

Research Interest

- Machine learning, Data Science, Artificial Intelligence
- Time-Series modeling from remote sensing
- Medical data application with heterogeneity

Research Experience

1. Warfighter Analytics using Smartphones for Health (WASH)

   (Defense Advanced Research Projects Agency project: DARPA FA8750-18-2-0027)
   (June 2019 – present)
   - Student managerial leader on TA-2 team:
     1) organize meeting agenda 2) compile monthly report sent to DARPA
   - Research student role:
     1) leading research project on symptom and medical diagnosis prediction using a Mixture-of-Experts (MoE) model on dynamic sensory data; 2) develop dynamic data imputation for mobile data missingness context; 3) Investigate private automated contact tracing (PACT) for Covid'19 patients through smart phone RSSI signals.
   - Partial work of this project was presented at AISTATS'20 conference as an oral presentation

2. Precise Advanced Technologies and Health Systems for Underserved Population (PATHS-UP)

   (National Science Foundation project: FY 2017 1648451, under NSF Engineering Research Center at Texas A&M) (Jan 2018 – May 2019)
   - Student managerial leader on Thrust-4 team:
     1) manage research progress 2) responsible for pre-diabetic participant data handling
   - Research student role:
     1) Glucose monitoring study for diabetic patients by using a multi-task deep neural network for macro-nutrition prediction from postprandial glucose time-series data; 2) Design a framework to visualize the glucose response and an interactive UI; 3) A lead contributor on US patent application 'PREDICTING FOOD MACRONUTRIENTS FROM BLOOD BIOMARKERS'
   - Partial work of this project was presented at IEEE BHI'19 conference as an oral presentation

3. Interpretable patient phenotyping for Emergency department clinical data modeling

   (In collaboration with Department of Emergency Medicine at Yale School of Medicine)
   (Aug 2018 – May 2019)
   - Responsible for prototyping models and data handling
   - Design a denoising auto-encoder with sparsity for interpretable patient outcome prediction
   - This work was presented at IEEE EMBS'19 conference as a poster

4. Contextual activity recognition for wearable daily motion routine capturing

   (Project under National Institutes of Health (NIH) of grant 1R01EB028106-01 and National Institute of Biomedical Imagine and Bioengineering, award #1R21EB028486-01)
   (Jan 2018 – July 2018)
   - Developing context modeling for understanding daily activity routine for uncertain wearable data
   - Modeling different data types using a multi-modal machine learning framework for pattern recognition under contextual information

- This work was presented at IEEE BSN'18 conference as a late-breaking poster

5. Summer Intern in China Potevio

   Guangzhou, Guangdong, China (July 2014 – Sep 2014)
   - Involved in communication network design and control for highway from Guangzhou to Xinhua
   - Electrical-mechanical system operation monitoring

6. Undergraduate research assistant

   Jilin University— Changchun, Jilin, China (June 2013 – Sep 2013)
   - Research assistant in Prof. Yuan Zhou's group in College of Communication Engineering
   - Involved in intelligent information processing, and device testing

Skills

Programming Languages: Python, R, JavaScript, Ruby on Rails, SQL
Software: Matlab, NI Multisim, labview, CAD

Publications

- **Zepeng Huo** et al. "Density-Aware Personalized Training for Risk Prediction in Imbalanced Medical Data" The 25th International Conference on Artificial Intelligence and Statistics (AISTATS). Under review.
- Randy Ardywibowo, **Zepeng Huo** et al. "VariGrow: Variational Architecture Growing for Task-Agnostic Continual Learning based on Bayesian Novelty" The 25th International Conference on Artificial Intelligence and Statistics (AISTATS). Under review.
- **Zepeng Huo** et al. "DynImp: Dynamic Imputation for Wearable Sensing Data Through Sensory and Temporal Relatedness" 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). Under review.
- **Zepeng Huo**, Lida Zhang, Rohan Khera, Shuai Huang, Xiaoning Qian, Zhangyang Wang, Bobak J Mortazavi "Sparse Gated Mixture-of-Experts to Separate and Interpret Patient Heterogeneity in EHR data." 2021 IEEE EMBS International Conference on Biomedical & Health Informatics (BHI). IEEE, 2021. (32.7% acceptance rate)
- **Zepeng Huo**, Arash Pakbin, Xiaohan Chen, Nathan C. Hurley, Ye Yuan, Xiaoning Qian, Zhangyang Wang, Shuai Huang, Bobak J. Mortazavi. "Uncertainty Quantification for Deep Context-Aware Mobile Activity Recognition and Unknown Context Discovery", International Conference on Artificial Intelligence and Statistics (AISTATS), Palermo, Italy, June, 2020. (Acceptance Rate: 29%)
- **Zepeng Huo**, Bobak J. Mortazavi, Theodora Chaspari, Nicolaas Deutz, Laura Ruebush, Ricardo Gutierrez-Osuna. "Predicting the meal macronutrient composition from continuous glucose monitors", IEEE Conference on Biomedical and Health Informatics (BHI). Chicago, Illinois, May 2019. (Acceptance Rate: 34%, oral presentation 11%)
- **Zepeng Huo**, Harinath Sundararajhan, Nathan C. Hurley, Adrian Haimovich, R. Andrew. Taylor, and Bobak J. Mortazavi. "Sparse Embedding for Interpretable Hospital Admission Prediction", IEEE Conference on Engineering in Medicine and Biology Conference (EMBC). Berlin, Germany, July 2019.
- **Zepeng Huo**, Roozbeh Jafari, Bobak Mortazavi. "Utilizing Context Information for Ubiquitous Computation" (Extended Abstract), IEEE Conference on Wearable and Implantable Body Sensor Networks (BSN). Las Vegas, Nevada, Mar 2018. (Acceptance Rate: 47.8%)
- **Zepeng Huo**, Xiao Huang, and Xia Hu. "Link Prediction with Personalized Social Influence". AAAI Conference on Artificial Intelligence (AAAI). New Orleans, Louisiana, Feb 2018. (Acceptance Rate: 24.5%)
- Alexander Berman, C. G. Leela Krishna, **Zepeng Huo**, Seth Polsley, Francis Quek, and Tracy Hammond. "iCanTrace: Avatar Personalization through Selfie Sketches", 11th Conference on Pen and Touch Technology in Education (CPTTE). Evanston, Illinois, Oct 2017

Patents

- 'PREDICTING FOOD MACRONUTRIENTS FROM BLOOD BIOMARKERS'
  - United States Patent Application Publication
  - Publication Number: US 2020/0352481 A1; Publication date: Nov. 12, 2020

Services

External Reviewer:

-Conference

- AAAI 2016/2021, CIKM 2016, ASONAM 2016, BIGCOM 2016, SBP-BRiMS 2016, WebSci 2016, EMBC 2021

-Journal

- JBHI, Sensors, PONE