Baoqian Wang

9797396050 | bawang@ucsd.edu | Personal Website

SUMMARY

I am a third year Ph.D. student in the joint doctoral program between University of California San Diego and San Diego State University. My research interests include robotics sensing, estimation, planning and learning, cyber physical systems, and distributed computing.

EDUCATION

University of California San Diego Aug. 2019 – Dec. 2022
San Diego State University San Diego, CA
Joint Ph.D. in Electrical and Computer Engineering; Overall GPA: 3.83/4

- **Coursework at UCSD**: Convex Optimization; Search and Optimization; Robotics Sensing&Estimation; Robotics Planning&Learning; Robot Reinforcement Learning

Texas A&M University Corpus Christi Aug. 2017 – May 2019
M.S. in Computer Science; Overall GPA: 3.82/4 Corpus Christi, TX

- **Coursework**: Statistic Learning, Design and Analysis of Algorithms; Data Structures; Advanced Operating Systems; Advanced Computer Architecture; Mobile Software Development; Spatial Statistics

Yangtze University Aug. 2013 – May 2017
B.S. in Prospecting Technology and Engineering; Overall GPA: 3.9/4 Wuhan, China

- **Coursework**: Advanced Mathematics; Linear Algebra; Probability Theory; C Programming; Matlab Programming;

SKILLS

Programming languages : Python (tensorflow, pytorch, mpi4py, etc.), C/C++, Matlab, Android Java, Latex, HTML
Tools : Github, AWS, ROS, Matlab Simulink, Docker, KVM, Android Studio.

ACADEMIC WORK EXPERIENCE

San Diego State University Dec. 2020 – Present
Research Assistant San Diego, CA

- Conduct researches on Distributed Multi-Agent Reinforcement Learning under guidance of Prof. Nikolay Atanasov from UCSD and Prof.Junfei Xie from SDSU. Have one paper published and one paper submitted to the top tier conferences in the area of robotics (ICRA) and AI (AAAI), respectively.
- Conduct researches on Towards Networked Airborne Computing in Uncertain Airspace and published one journal and several conference papers in the area of communications such as ICC, Globecom, TNSE.
- Serve as an advisor for Master and Undergraduate students in the lab, for instance, participated in an undergraduate student competition as an advisor in 2020 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) and won Special Track on Networked Computing on the Edge Award.

San Diego State University Aug. 2019 – Dec. 2020
Teaching Assistant San Diego, CA

- Taught two lectures and graded assignments, projects, exams for the course **EE600 Seminar: Machine Learning**.

Texas A&M University Corpus Christi Sept. 2017 – Aug. 2019
Research Assistant Corpus Christi, TX

- Conduct researches on Developing an Open Networked Airborne Computing Platform and published one journal and several conference papers in the area of unmanned aerial systems (ICUAS), and communications (IET Communications).
- Conduct researches on Hybrid Deep Learning-based and Physical Model-based Trajectory Modeling for UAVs and published one conference paper in AIAA Scitech.
- Implement algorithms from research papers on real robotics systems such as vision-based object tracking and localization of a mobile robot.

PROJECTS

Distributed Multi-Agent Reinforcement Learning Mar. 2020 – present

Collaborative project between UCSD and SDSU funded by NSF and DCIST

- Distributed training framework to improve the training efficiency of multi-agent reinforcement learning.
- Coded scheme to improve robustness of the distributed training system to uncertain stragglers.

Vision-based Autonomous Driving Robot Feb. 2020 – May 2020

Undergraduate student competition in 2021 IEEE/ASME AIM.

- An autonomous driving robot that is capable of navigating in both a known urban environment and an unknown and dynamic rural environment, which is achieved by deep reinforcement learning.

Towards Networked Airborne Computing Sept. 2019 – present

NSF CAREER funded project

- Mobility-aware coded distributed computing.
- Stochastic mobility control to facilitate robust computing under uncertainty.

Develop an Open Networked Airborne Computing Platform Sept. 2017 – Sept. 2019

NSF funded project

- A platform using Jetson TX2 as computing unit, and directional antenna to enable long range communication.
- Implementation of two virtualization techniques including Docker and KVM on Jetson TX2 to improve computing capability.

Trajectory Modeling for UAVs Sept. 2017 – Sept. 2019

NSF EAGER funded project

- A comprehensive 3-D mobility model to capture the movements of aircrafts.
- Combination of deep Learning-based model (LSTM) and UAV physical model for trajectory modeling.

Geolocation Using Video Sensor Measurements Feb. 2019 – Jun. 2019

- Visioned-based objecting tracking of mobile robot using YoloV3.
- Mobile robot localization with camera projection model.

AWARDS AND SCHOLARSHIPS

- SDSU Graduate Fellowship ($25,000) Jun. 2021
- SDSU Graduate Travel Fund ($1000) Oct. 2020
- President's International Excellence Scholarship ($3000) Sept. 2018
  The first class scholarship for international students in Texas A&M University Corpus Christi
- National Scholarship (¥8000) Oct. 2016
  A scholarship given to top 1% students in each university in China for their great academic performance.
- Wang Tao Talent Scholarship (¥10000) Oct. 2015
- China National Petroleum Corporation Scholarship (¥6000) Oct. 2014

Publications

Journals

- **B. Wang**, J. Xie, K. Lu, Y. Wan, S. Fu, “On Batch-Processing Based Coded Computing for Heterogeneous Distributed Computing Systems", **IEEE Transactions on Network Science and Engineering**, Vol.8, pp:2438-2454, 2021.
- **B. Wang**, J. Xie, S. Li, Y. Wan, Y. Gu, S. Fu, K. Lu, “Computing in the Air: An Open Airborne Computing Platform", **IET Communications**, Vol.14, pp. 2410-2419, 2020.
- J. Xie, Y. Wan, **B. Wang**, S. Fu, K. Lu,“A Comprehensive 3-Dimensional Random Mobility Modeling Framework for Airborne Networks", **IEEE Access**, Vol.6, pp. 22849-22862, 2018.

Conferences

- D. Wang, **B. Wang**, J. Zhang, K. Lu, J. Xie, Y. Wan, S. Fu, "CFL-HC: A Coded Federated Learning Framework for Heterogeneous Computing Scenarios", **2021 IEEE Global Communications Conference (Globecom).**
- **B. Wang**, J. Xie, N. Atanasov, “Coding for Distributed Multi-Agent Reinforcement Learning", **2021 International Conference on Robotics and Automation (ICRA).**
- **B. Wang**, J. Xie, K. Lu, Y. Wan, S. Fu “Multi-Agent Reinforcement Learning Based Coded Computation for Mobile Ad Hoc Computing", **2021 International Conference on Communications (ICC).**
- C. Douma, **B. Wang**, “Coded Distributed Path Planning for Unmanned Aerial Vehicles", **2021 AIAA Aviation Forum**
- **B. Wang**, J. Xie, “Data-Driven Multi-UAV Navigation in Large-ScaleDynamic Environment Under Wind Disturbances", **2021 AIAA Scitech Forum.**
- **B. Wang**, J. Xie, Y. Wan, G. A. G. Reyes, L. R. G. Carrilo,“3-D Trajectory Modeling for Unmanned Aerial Vehicles", **2019 AIAA Scitech Forum.**
- **B. Wang**, J. Xie, K. Lu, Y. Wan, “Coding for Heterogeneous UAV-based Networked Airborne Computing", **2019 IEEE Globecom Workshop.**
- **B. Wang**, J. Xie, S. Li, Y. Wan, S. Fu, K. Lu,“Enabling High-Performance Onboard Computing with Virtualization for Unmanned Aerial Systems", **2018 International Conference on Unmanned Aircraft Systems (ICUAS).**