Bangquan Xie

I am currently an assistant professor and research fellow of advanced engineering at Great Bay University, China（助理教授、研究员（正高））. I was a joint training Ph.D.of South China University of Technology, China, and Clemson University, USA. And I was a Postdoctoral researcher of Embry-Riddle Aeronautical University, USA.

My research interests include Autonomous Driving and Robot, Embodied AI, Machine Vision, Multi-modal Fusion & State Estimation, Attention Mechanism & Transformers, AutoML & NAS, Large Model Semi-Supervised Learning, Model Compression and Distillation.

**Visit and Intern Experience**

**Visiting Student:** I conducted in-depth learning and communication with the advisor team during the visit. And I am publishing papers as a co-corresponding author with the visiting team.

**Embry-Riddle Aeronautical University. USA.**

Focusing on autonomous aerial vehicle detection based attention mechanism.

**University of Oklahoma. USA.**

Focusing on battery aging and energy consumption based on reinforcement learning for battery electric vehicle.

**Research Intern:** The following companies have research and development centers at Clemson University. The intern at BMW and Bosch is a part of the content of CU-ICAR "Deep Orange" project.

BMW Spartanburg factory, USA

Bosch Charleston factory, USA

TIMKEN Greenville factory, USA.

**Publications（masterpiece）**

**First Author Journals Articles**

1. **Bangquan Xie**, Zongming Yang, Liang Yang, Ruifa Luo, Ailin Wei, Xiaoxiong Weng, Bing Li. “Multi-Scale Fusion With Matching Attention Model：A Novel Decoding Network Cooperated With NAS for Real Time Semantic Segmentation”，*IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*，2021（IF: 9.551, 中科院1区TOP刊）
2. **Bangquan Xie**, Zongming Yang, Liang Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “SPD: Semi-supervised Learning and Progressive Distillation for 3D detection”, *IEEE Transactions on Neural Networks and Learning Systems*, 2022（IF: 14.255，中科院1区TOP刊）
3. **Bangquan Xie**, Zongming Yang, Liang Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “AMMF: Attention-based Multi-phase Multi-task Fusion for Small Contour Object 3D Detection”，*IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*，2022（IF: 9.551，中科院1区TOP刊）
4. **Bangquan Xie,** Liang Yang, Zongming Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “MuTrans: Multiple Transformers for Fusing Feature Pyramid on 2D and 3D Object Detection”，*IEEE TRANSACTIONS ON IMAGE PROCESSING*，2023（IF: 11.041, 中科院1区TOP刊）
5. **Bangquan Xie,** Zongming Yang, Liang Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “ANAS: Asymptotic NAS for Large-scale Proxyless Search and Multi-task Transfer Learning”，*PATTERN RECOGNITION*, 2023（IF: 8.518，中科院1区TOP刊）

**First author Conference Articles**

1. **Bangquan Xie**, Liang Yang, Zongming Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “FocusTR: Focusing on Valuable Feature by Multiple Transformers for Fusing Feature Pyramid on Object Detection”，*IROS 2022*（Top Conference）
2. **Bangquan Xie,** Liang Yang, Zongming Yang, Ailin Wei, Xiaoxiong Weng, Bing Li. “FourStr: When Multi-sensor Fusion Meets Semi-supervised Learning and Distillation”, *ICRA 2023*（Top Conference）

**Co- Author Journals Articles**

1）Ling, Yancheng; Ma, Zhenliang ; Xie, Bangquan; Zhang, Qi; Weng, Xiaoxiong. “SA-BiGCN: Bi-Stream Graph ConvolutionNetworks With Spatial Attentions for the Eye Contact Detection in the Wild”. IEEE Intelligent Transportation Systems Transactions. 2023 （IF: 9.551, 中科院1区TOP刊）

**Co-corresponding Author Journals Articles**

1) Yancheng Lin, Bangquan Xie, Xiaoxiong Weng. “Pedestrian Crossing Decision Model Based on Transformer in Autonomous Driving”. *IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*. 2023 （IF: 9.551， Under review）

1. Zhiyong Wen, Bangquan Xie, Ruifa Luo, Xiaoxiong Weng. “Functional design of intelligent expressway vehicle road collaboration system based on ETC-X”, *IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS*，2023 （IF: 9.551， Under review）
2. Ling Wang, Bangquan Xie，Yongxin Liu. “Autonomous Aerial Vehicle Detection based Attention Mechanism in the Low Altitude Clutter Background”. *IEEE Transactions on Neural Networks and Learning Systems,* 2023（IF: 14.255，Minor revision ）
3. J. Shi, Bangquan Xie, Bin Xu. “Battery Aging Minimization and Energy Consumption based on Reinforcement Learning for Battery Electric Vehicle”. *APPLIED ENERGY*, 2023（IF: 11.446， Under review ）

**Book Chapters**

1. **Bangquan Xie**, Qiwu Qin. "Testing and Maintenance of Vehicle Electronic Control Systems" .2016. ISBN 978-7-5160-1595-7
2. **Bangquan Xie**. "Maintenance Work Log of Vehicle Electronic Control System". 2016. (school-based teaching materials)
3. **Bangquan Xie.** "Road Transport Safety Technology". 2014. (school-based teaching materials)

**Patents**

Design of an Asymptotic Neural Network Architecture Search System for Agentless Search and Multi-task Transfer Learning (First Author, Applying)

Stereo fusion and Semi-Supervised Learning for Multi-sensor Single-stage 3D Target Detector (First author, Applying)

Multiple Transformers for Sensor Fusion on 2D/3D Object Detection (First author, Applying)

**Project Experience/Proposal Writing**

1. 09/2020~09/2022. U.S.Department of Transportation Program, #01838154,"Safe and Efficient E-Wayfinding (SeeWay) Guidance for the Transition to Autonomous Vehicles for the Visually Impaired". PI: Bing Li, $94,350
2. 09/2020~05/2022. U.S.Department of Transportation Program, #01838151, "Cloud-based Collaborative Road Condition Monitoring using In-Vehicle Smartphone Data and Deep Learning". PI: Yunyi Jia, $102,269
3. 09/2020~09/2022. U.S. Department of Transportation Program, #01838168. "Improving Freight Transport Mobility and Efficiency via Synchronization". PI: Huynh,Nathan, $112,602
4. Shenzhen Daya Bay Nuclear Power Plant Park, Traffic Intelligent Project (Intelligent Identification, Intelligent Parking, and Intelligent Dispatching). 09-12, 2016.
5. Guangdong Provincial Department of Education, Special Innovation Project, 2017KTSCX005, Research on Decision Model for Pedestrian Crossing in Autonomous Driving Environment, 01, 2018 - 12, 2019.
6. Science and Technology Department of Guangdong Province, 2021 Natural Science Foundation of Guangdong Province, 2021A1515011788, Research on 3D linear road model and dynamic line-of-sight safety evaluation method under limited field of view space, 01, 2021 - 12, 2023, under research
7. R&D Center for Key Technologies and Equipment of Intelligent Vehicle-Road Collaboration, Ministry of Transport, Technology Development Project, Vehicle-Road Collaboration and Traffic Signal Control Technology in New Vehicle Network Environment, 10,2019 - 10, 2022
8. Guangzhou Public Transport Group, Consulting Project, Data Mining and Analysis for Guangzhou Yang Cheng Tong Public Transport and Subway, 06, 2017 - 06, 2018
9. National Natural Science Foundation of China, General Project, 52072129, Research on the Space-Time Performance of Urban Road Network Based on Four-Dimensional State Space Model, 01, 2021 - 12, 2024, under research.

**Awards & Recognitions**

Selected for the 2019 Guangdong Province International Training Plan for Outstanding Young Scientific Research Talents in Higher Education Institutions.

Won the "Excellent Project Award" in the "2016 China "Internet + Transportation" Innovation and Entrepreneurship Competition.

**Invited Talks**

1. Environment Perception of Autonomous Driving Based on Deep Learning, Clemson University, SC, USA, December 2, 2019.
2. FocusTR: Focusing on Valuable Feature by Multiple Transformers for Fusing Feature Pyramid on Object Detection, Kyoto, Japan. October 13, 2022. (Virtual)

**Paper Review Service****s**

2019-Present IEEE Transactions on Intelligent Transportation Systems

2020-Present IEEE Transactions on Neural Networks and Learning Systems

2020-Present PATTERN RECOGNITION

2021-Present IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

2021-Present IEEE TRANSACTIONS ON IMAGE PROCESSING

2022-Present IEEE International Conference on Robotics and Automation (ICRA)