Feng Qiao

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Research Summary

Ph.D. Candidate in Computer Science at Washington University in St. Louis, focusing on Image/Video Generation and 3D Vision and VLA. 5+ years of prior experience in autonomous driving and robotics perception. Published in top venues (CVPR, ICCV, ECCV, WACV) with 443 citations and h-index 6.

Education

Washington University in St. Louis — **St. Louis, MO, USA**
Ph.D. in Computer Science, Advisor: Prof. Nathan Jacobs — *Aug 2024–Present*

RWTH Aachen University — **Aachen, Germany**
M.S. in Automotive Engineering — *Oct 2016–Jun 2019*
Thesis: Improvement of person and object recognition in access control of public transport through sensor data fusion and machine learning

RWTH Aachen University — **Aachen, Germany**
Exchange Program in Mechanical Engineering — *Oct 2015–Jul 2016*

Beijing Institute of Technology — **Beijing, China**
B.S. in Vehicle Engineering — *Sep 2012–Jul 2016*
Awarded National Scholarship (Ranked 1st, highest honor in China)

Experience

XMotors. USA, Inc. (XPENG) — **Santa Clara, CA, USA**
Research Scientist Intern — *May 2026–Aug 2026*
- Conducted research on vision-language-action (VLA) models for end-to-end autonomous driving.
- Designed and integrated cross-modal alignment techniques including visual grounding, temporal reasoning, policy distillation, and imitation/reinforcement learning to improve model interpretability and action quality.

Inceptio Technology — **Shanghai, China**
Software Engineer & Lidar Team Leader — *2020–2021*
- Architected a multi-task point cloud model for 3D object detection, velocity estimation, tracking, and curb detection.
- Ported and accelerated camera-based 3D detection models on NVIDIA GPUs using custom TensorRT plugins.
- Adapted LiDAR deep learning models for deployment on NVIDIA GPUs with CUDA and embedded SoCs (Ambarella, Horizon Robotics) without performance degradation.

SAIC Motor — **Shanghai, China**
Software Engineer, Autonomous Driving Dept. — *2019–2020*
- Established the end-to-end learning-based LiDAR perception pipeline, from data processing to model deployment.
- Ported the PointPillars model to NVIDIA Pegasus platforms using CUDA for real-time inference.
- Conducted systematic evaluation and selection of LiDAR sensors for production vehicles.

RWTH Aachen University, WZL — **Aachen, Germany**
Research Assistant — *Jan 2019–Jun 2019*
Enhanced object detection by fusing sensor data and training an SSD model with TensorFlow.

Daimler Greater China Ltd. — **Beijing, China**
Software Intern, AD Level 4 Team — *Jun 2018–Dec 2018*
Developed a novel multi-LiDAR extrinsic calibration system using a high-precision total station.

Publications

Google Scholar Citations: 443 | h-index: 6 | *Co-first authors

Preprint

1. Y. Cui*, **F. Qiao***, N. Jacobs. "StereoGenBench: A Synthetic Multi-Camera Benchmark for Stereo Generation under Controlled Baseline Regimes." *arXiv*, 2026.
2. Y. Luo*, **F. Qiao***, Z. Xiong, Y. Li, N. Jacobs. "GenOpticalFlow: A Generative Approach to Unsupervised Optical Flow Learning." *arXiv*, 2026.
3. Z. Xiong, Y. Song, L. He, W. Xiong, Y. Yuan, **F. Qiao**, N. Jacobs. "PhysAlign: Physics-Coherent Image-to-Video Generation through Feature and 3D Representation Alignment." *arXiv*, 2026.

Conference Proceedings

3. **F. Qiao**, Z. Xiong, N. Jacobs, X. Zhu, Y. Ma, Q. He. "MCPDepth: Panorama Depth Estimation from Multi Cylindrical Panorama by Stereo Matching." *CVPR Workshop (OmniCV)*, 2026.
4. **F. Qiao**, Z. Xiong, E. Xing, N. Jacobs. "Towards Open-World Generation of Stereo Images and Unsupervised Matching." *ICCV*, 2025.
5. W. Liu, J. Zhu, G. Zhuo, W. Fu, Z. Meng, Y. Lu, M. Hua, **F. Qiao**, Y. Li, Y. He, L. Xiong. "UniMSF: A Unified Multi-Sensor Fusion Framework for ITS Global Localization." *ITSC*, 2024. **Best Paper Award**
6. X. Peng, R. Chen, **F. Qiao**, L. Kong, Y. Liu, T. Wang, X. Zhu, Y. Ma. "SAM-guided Unsupervised Domain Adaptation for 3D Segmentation." *ECCV*, 2024.
7. P. Rao*, **F. Qiao***, W. Zhang, Y. Xu, Y. Deng, G. Wu, Q. Zhan. "QuadFormer: Quadruple Transformer for Unsupervised Domain Adaptation in Power Line Segmentation." *UR*, 2024.
8. Z. Xiong, **F. Qiao**, Y. Zhang, N. Jacobs. "StereoFlowGAN: Co-training for Stereo and Flow with Unsupervised Domain Adaptation." *BMVC*, 2023.
9. P. Cong, X. Zhu, **F. Qiao**, Y. Ren, X. Peng, Y. Hou, L. Xu, R. Yang, D. Manocha, Y. Ma. "STCrowd: A Multimodal Dataset for Pedestrian Perception in Crowded Scenes." *CVPR*, 2022.
10. S. Li, K. Gong, C. H. Liu, Y. Wang, **F. Qiao**, X. Cheng. "MetaSAug: Meta Semantic Augmentation for Long-Tailed Visual Recognition." *CVPR*, 2021.

Journal Articles

11. Z. An, Z. Li, M. Ye, **F. Qiao**, J. Li, Z. Wu, V. Thengane, C. Li, L. Li, L. Van Gool, G. Sun, S. Belongie. "Video Understanding: From Geometry and Semantics to Unified Models." *Machine Intelligence Research (MIR)*, 2026.
12. D. Han, C. Zhang, F. D. Puspitasari, S. Chen, **F. Qiao**, S. Zheng, S. Lee, C. S. Hong, Y. Yang. "Adapting Lightweight SAM with Gradient Map for Mirror Object Segmentation." *Information Sciences*, 2025.

Patents

13. **F. Qiao**, Z. Han, G. Chen, X. Cheng. Image semantic segmentation method and device. *Chinese Patent*, CN113902913A, 2022.
14. Z. Han, **F. Qiao**, X. Cheng, R. Yang. Obstacle detection method and device based on Lidar. *Chinese Patent*, CN114035202A, 2022.

Awards & Honors

2024: Best Paper Award 1st Place, Intelligent Transportation Systems Conference (ITSC)

2016: Outstanding Graduate, Beijing Institute of Technology

2013: National Scholarship (Ranked 1/72), Ministry of Education, China

2013–15: Outstanding Scholarship (3 consecutive years), Beijing Institute of Technology

Professional Services

Conference Reviewer: CVPR (2023-26), ICCV (2025), ECCV (2024, 2026), NeurIPS (2026), AAAI (2025-26),

WACV (2026), BMVC (2026), ITSC (2024-25)
Journal Reviewer: TPMAI, T-ITS, T-IV, JAUTO, IJVD