QIAOJUN FENG

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EDUCATION

Ph.D. in Electrical and Computer Engineering Sep. 2017 - Sep. 2023 (exp.)
University of California San Diego, La Jolla, CA, USA

M.S. in Electrical and Computer Engineering Sep. 2017 - Dec. 2019
University of California San Diego, La Jolla, CA, USA

Bachelor of Engineering in Automation Aug. 2013 - Jul. 2017
Tsinghua University, Beijing, China

EXPERIENCE

X, the moonshot factory (formerly Google X) - AI Resident Jun. 2022 - Sep. 2022
Mountain View, California

· Tackled computer vision tasks in computational agriculture under Project Mineral.

Nuro - Software Engineer Intern (Localization & Mapping) Jun. 2021 - Sep. 2021
Mountain View, California

· Built globally consistent and accurate maps with 3D measurements.

RESEARCH INTERESTS

Robotics, especially in environment perception and representation.
Semantic SLAM. 3D Semantic Reconstruction and Understanding.

PUBLICATIONS

Preprint

Q. Feng and N. Atanasov, "TerrainMesh: Metric-Semantic Terrain Reconstruction from Aerial Images Using Joint 2D-3D Learning", under review.

· M. Shan, V. Dhiman, **Q. Feng**, J. Li and N. Atanasov, "OrcVIO: Object residual constrained Visual-Inertial Odometry", under review.

Journal

· O. Atan, W. R. Zame, **Q. Feng** and M. van der Schaar, "Constructing effective personalized policies using counterfactual inference from biased data sets with many features", Machine Learning, 2018.

Conference

· M. Shan, **Q. Feng**, Y. Jau and N. Atanasov, "ELLIPSDF: Optimizing Encoding and Similarity Transformation of Object Signed Distance Functions from Multi-view RGB-D Sequences", IEEE/CVF International Conference on Computer Vision (ICCV), 2021.

· T. Zhao, **Q. Feng**, S. Jadhav and N. Atanasov, "CORSAIR: Convolutional Object Retrieval and Symmetry-AIded Registration", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.

· **Q. Feng** and N. Atanasov, "Mesh Reconstruction from Aerial Images for Outdoor Terrain Mapping Using Joint 2D-3D Learning", IEEE International Conference on Robotics and Automation (ICRA), 2021.

· **Q. Feng** and N. Atanasov, "Fully Convolutional Geometric Features for Category-level Object Alignment",IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.

- M. Shan, **Q. Feng** and N. Atanasov, "OrcVIO: Object residual constrained Visual-Inertial Odometry",IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.
- **Q. Feng**, Y. Meng, M. Shan and N. Atanasov, "Localization and Mapping using Instance-specific Mesh Models", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019.
- H. Chen, X. Pei, Z. Zhang, D. Yao, **Q. Feng**, Z. Wang, "Driving Behavior Differences between Crash-involved and Crash-not-involved Drivers using Urban Traffic Surveillance Data", IEEE International Conference on Service Operations and Logistics, and Informatics(SOLI), 2016.

Workshop

- **Q. Feng**, Y. Meng, and N. Atanasov, "Dense spatial segmentation from sparse semantic information", Workshop on Learning and Inference in Robotics at Robotics: Science and Systems(RSS), 2018.

PROJECTS

Studies of semantic-aware 3D map representation Apr. 2018 - Present
Advisor: Prof. Nikolay Atanasov, Existential Robotics Laboratory, UC San Diego

- Built object-based map by retrieving CAD models and aligning with object observations. Conference papers accepted by IROS 2021/2020.
- Used jointly 3D-2D learning method to reconstruct terrain mesh model with an RGB image and sparse depths. One conference paper accepted by ICRA 2021.
- Used keypoints and elipsoids to represent objects and define corresponding residual in a visual-inertial odometry system. One conference paper accepted by IROS 2020.
- Used deformable mesh to represent semantic objects. Used semantic observations as supervision to carve the mesh model with a differentiable multi-view geometry constraints. One conference paper accepted by IROS 2019.
- Used semantic keypoints on different categories of objects to divide the 3D environment. Inferred probabilistic classification for any points based on given keypoints and divisions. One workshop paper[link] at RSS 2018.

Studies of logged bandit data learning algorithm Jul. 2016 - Dec. 2016
Advisor: Prof. Mihaela van der Schaar, Data Science and Decision Lab, UCLA

- Designed a feature selection algorithm for logged bandit data by counterfactual inference methods. One journal paper[link] published on Machine Learning journal.

Studies of driving pattern recognition and analysis Jun. 2015 - May. 2016
Advisor: Prof. Jianming Hu and Prof. Xin Pei, Intelligent Transportation Systems Lab, Tsinghua University

- Processed the data collected from road facilities sensors. Used time headway and other related features on driving behavior to evaluate the risk of driver involving in accidents. One conference paper [link].

AWARDS & HONORS

IROS Student and Developing Countries (SDC) Travel Award 2019
Electrical and Computer Engineering Department Fellowship 2017
Outstanding Graduate of Department of Automation 2017

SERVICES

Reviewer, IEEE T-RO, IEEE RA-L, ICRA 2020/2021/2023, IROS 2019/2020/2021/2022/2023, CDC 2020
Session Chair, IROS 2021
Mentor, ECE Summer Research Internship Program Summer 2019
Teaching Assistant, ECE 276A Sensing and Estimation in Robotics Winter 2019/2020/2022

SKILLS

Programming Languages: C/C++, Python