

Xiaohan Fei

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EDUCATION	<p>UNIVERSITY OF CALIFORNIA, LOS ANGELES Ph.D. in Computer Science Advisor: Prof. Stefano Soatto Research Group: UCLA Vision Lab (http://vision.ucla.edu) GPA: 3.88/4.0 Title of PhD Thesis: Inertial-aided Visual Perception of Geometry and Semantics</p> <p>ZHEJIANG UNIVERSITY B.Eng. in Information and Communication Engineering Major: Information and Communication Engineering Minor: Advanced honor Class of Engineering Education (ACEE), Chu-Kechen College GPA: 3.98/4.0(92.35/100) Title of Undergraduate Thesis: Wide-baseline feature matching for panoramic images Thesis advisor: Prof. Zhiyu Xiang</p>	<p>Sept. 2014 - Sept. 2019</p> <p>Sept. 2010 - June 2014</p>
RESEARCH INTERESTS	<p>My research interests lie in the intersection of computer vision, robotics, and machine learning: I develop algorithms, models, and systems to enable robots to see and understand the surrounding physical world using techniques from optimization, deep learning, and sensor fusion. Specifically, I have been working on (i) Simultaneous Localization and Mapping (SLAM) and Visual-Inertial Odometry (VIO) for robot localization, (ii) depth prediction and completion to assist robot navigation, and (iii) semantic scene understanding to enable high-level robotic tasks. My research resulted in the world's first real-time visual-inertial semantic mapping system demonstrated at CVPR 2016, and a best paper award at ICRA 2019.</p>	
OPEN-SOURCE SOFTWARE	<p>XIVO: a state-of-the-art localization and mapping software, starred by 550+ developers worldwide. For the rest, see my github page: https://github.com/feixh</p>	
RESEARCH EXPERIENCE	<p>AMAZON WEB SERVICES, SEATTLE, WASHINGTON Applied Scientist I'm a member of the Rekognition (Rek) team, and a founding member of an initiative for cloud-based 3-D computer vision.</p> <p>FACEBOOK REALITY LABS, REDMOND, WASHINGTON Research Scientist I was a member of the Surreal team led by Dr. Richard Newcombe, and conducted research in computer vision for AR/VR.</p> <p>NVIDIA RESEARCH, SANTA CLARA, CALIFORNIA Research Intern Conducted research in unsupervised learning of structural representation for 3-D objects.</p> <p>META COMPANY, SAN MATEO, CALIFORNIA Research Intern I worked with Dr. Karri Pulli and Dr. Timo Ahonen, and developed a tightly-coupled visual-inertial SLAM system for Meta's 2nd generation Augmented Reality headset. The system I developed is the indispensable core software component that supports all the downstream AR applications.</p> <p>UNIVERSITY OF CALIFORNIA, LOS ANGELES Graduate Student Researcher Conducted research in image-based localization, visual-inertial sensor fusion, and semantic mapping.</p>	<p>April. 2020 - Present</p> <p>Sept. 2019 - March 2020</p> <p>Summer 2018</p> <p>Summer 2017</p> <p>Sept. 2014 - Sept. 2019</p>
AWARDS & DISTINCTIONS	<p>2019: Best Paper Award in Robot Vision, out of 2900 submissions, at ICRA 2019 2013: Meritorious Winner of Mathematical Contest in Modeling (top 15% of 6000 teams worldwide) 2012: National Scholarship (the highest honor for undergraduates in China)</p>	
PUBLICATIONS	<p>[1] A. Wong, X. Fei, B. Hong, and S. Soatto. An Adaptive Framework For Learning Unsupervised Depth Completion. In <i>IEEE Robotics and Automation Letters</i> (RA-L), 2021.</p>	
* indicates equal contribution		

- [2] A. Wong*, **X. Fei***, and S. Soatto. Unsupervised Depth Completion from Visual-Inertial Odometry. In *International Conference on Robotics and Automation (ICRA)*, 2020. Also in *IEEE Robotics and Automation Letters (RA-L)*.
- [3] **X. Fei**, A. Wong, and S. Soatto. Geo-Supervised Visual Depth Prediction. In *International Conference on Robotics and Automation (ICRA)*, 2019. (**Best Paper Award in Robot Vision**) Also in *IEEE Robotics and Automation Letters (RA-L)*.
- [4] **X. Fei**, S. Soatto. Visual-Inertial Object Detection and Mapping. In *European Conference on Computer Vision (ECCV)*, 2018.
- [5] J. Dong*, **X. Fei***, and S. Soatto. Visual-Inertial-Semantic Scene Representation for Object Detection. In *Computer Vision and Pattern Recognition (CVPR)*, 2017.
- [6] **X. Fei**, K. Tsotsos, and S. Soatto. A Simple Hierarchical Pooling Data Structure for Loop Closure. In *European Conference on Computer Vision (ECCV)*, 2016.

PROFESSIONAL SERVICES Reviewer of top computer vision (CVPR, ICCV, ECCV), robotics (ICRA, IROS), and artificial intelligence (AAAI) conferences.

TALKS & WORKSHOPS *Inertial-aided Visual Perception of Geometry and Semantics*, at Amazon Web Services, 2020.
Inertial-aided Visual Perception for Localization, Mapping, and Detection, at MagicLeap, Microsoft Research, Facebook Reality Labs, 2019.
Visual-Inertial-Semantic Scene Representation, at Bridges to 3D Workshop, CVPR 2017.

RELEVANT COURSEWORK **University of California, Los Angeles:** Machine Perception (Prof. S. Soatto), Convex Optimization (Prof. L. Vandenberghe), Calculus of Variations (Prof. L. Vese), Vision as Bayesian Inference (Prof. A. Yuille), Applied Probability (Prof. Y. Wu), Theoretical Statistics (Prof. A. Amini), Numerical Analysis (Prof. J. Teran), Machine Learning Algorithm (Prof. M. Sarrafzadeh)
Zhejiang University: Computer Vision (Prof. Z. Xiang), Spectral Analysis of Signals (Prof. X. Gong), Information Theory (Prof. Z. Zhang), Mathematical Modeling (Prof. Q. Yang)

RELEVANT SKILLS **Programming Language:** C++, Python, JavaScript, MATLAB, OpenGL, Android
Software Framework: TensorFlow, PyTorch, ROS, OpenCV, Eigen