Mo Shan

moshan@ucsd.edu | me-llamo-sean.cf | https://www.linkedin.com/in/mo-shan |

Education

University of California, San Diego — La Jolla, CA, USA
Master of Science in Electrical and Computer Engineering, GPA 3.74/4 — *Sept. 2016 – Feb. 2020*

National University of Singapore — Singapore
Bachelor of Science in Electrical and Computer Engineering, GPA 4.84/5 — *Sept. 2010 – Jun. 2014*

University of Southampton — Southampton, United Kingdom
Student Exchange Program in School of Electronics and Computer Science — *Dec. 2012 – Jul. 2013*

Research Interests

- Rich models of tightly coupled localization and environmental representation that unify multiple characteristics, such as the geometric landmarks, semantic object-level map, object surfaces, and yet scale to large environments in real-time on embedded platforms such as quadrotors
- Simultaneous localization and mapping; visual-inertial odometry
- Relevant fields: computer vision, machine learning, optimization

Experience

Associate Scientist — Jun. 2014 – Sept. 2016
Temasek Laboratories — *Singapore*
- Spearheaded the research on using laser-stereo sensor suite for UAV navigation
- Developed visual odometry using Google Map to aid UAV navigation

Summer Intern — Jun. 2012 – Sept. 2012
Infineon — *Singapore*
- Pioneered a simulation platform for touch sense algorithm development
- Investigated the performance of the microcontroller for release

Awards

Multi-Year Dean′s Fellowship and Jacobs Fellowship — Sept. 2016 – Sept. 2017
UCSD — *La Jolla, CA, USA*
- Most prestigious fellowship offered by the ECE Department

The 3rd International UAV Innovation Grand Prix — Nov. 2015
AVIC — *Zhejiang, China*
- Championship of rotary wing competition
- Developed object detection based on HOG

Technical Skills

Languages: Python, C++, MATLAB
Frameworks: ROS
Developer Tools: Git, Docker, VS Code, PyCharm
Libraries: OpenCV, Eigen, Sophus, PyTorch

Professional Activities

Talks

- "OrcVIO: Object residual constrained Visual-Inertial Odometry", IROS Oral Presentation, Oct. 25, 2020.
- "Geo-referenced UAV Localization", PaoPao Robot Open-course, April 21, 2018.

Reviewer

- Journals: IEEE Transactions on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L)
- Conferences: International Conference on Intelligent Robots and Systems (IROS), Conference on Computer Vision and Pattern Recognition (ICRA), Conference on Computer Vision and Pattern Recognition (CVPR)

Publications

Journal Articles

- Z. Gao, **M. Shan**, Q. Li. (2015). Adaptive Sparse Representation for Analyzing Artistic Style of Paintings. ACM Journal on Computing and Cultural Heritage
- Z. Gao, Q. Li., R. Zhai, **M. Shan**, F. Lin. (2015). Adaptive and Robust Sparse Coding for Laser Range Data Denoising and Inpainting. IEEE Transactions on Circuits and Systems for Video Technology

Conference Proceedings

- **M. Shan**, Q. Feng, N. Atanasov. (2020). OrcVIO: Object residual constrained Visual-Inertial Odometry. In IEEE International Conference on Intelligent Robots and Systems (IROS). Las Vegas, USA.
- Q. Feng, Y. Meng, **M. Shan**, N. Atanasov. (2019). Localization and Mapping using Instance-specific Mesh Models. In IEEE International Conference on Intelligent Robots and Systems (IROS). Macao, China.
- **M. Shan**, Y. Bi, H. Qin, J. Li, Z. Gao, F. Lin and B. M. Chen. (2016). A brief survey of visual odometry for micro aerial vehicles, Proceedings of the 42nd Annual Industrial Electronics Conference (IECON), Florence, Italy.
- **M. Shan**, Fei Wang, Feng Lin, Zhi Gao, Ya Z. Tang, Ben M. Chen. (2015). Google Map Aided Visual Navigation for UAVs in GPS-denied Environment. In IEEE International Conference on Robotics and Biomimetics (ROBIO). Zhuhai, China.
- Z. Gao, **M. Shan**, L. Cheong, Q. Li. (2014). Adaptive Sparse Coding for Painting Style Analysis. In Computer Vision-ACCV 2014. Springer Berlin Heidelberg.
- Z. Gao, L. Cheong, **M. Shan**. (2012). Block-sparse rpca for consistent foreground detection. In Computer Vision-ECCV 2012 (pp. 690-703). Springer Berlin Heidelberg.

Workshop Papers

- **M. Shan**. (2019). Weakly supervised keypoint detection. Southern California Robotics Symposium (SCR), Pasadena, USA.
- **M. Shan**, N. Atanasov. (2017). A spatiotemporal model with visual attention for video classification. In Robotics: Science and Systems (RSS) Workshop on Articulated Model Tracking, Cambridge, USA.
- **M. Shan**, A. Charan. (2015). Google Map Referenced UAV Navigation via Simultaneous Feature Detection and Description. Poster paper. In IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). Hamburg, Germany.