Shijie Lin

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School of Electronic Information, Wuhan University, Luojia Hill, Wuchang District, Wuhan 430072, Hubei, PRC

Education

M. Eng., Wuhan University, Hubei, China *Sep. 2017 -- Jul. 2019*
Electronics Engineering (**EE**); Recommended Postgraduate; **GPA:** 85.9/100

Exchange Student, Keio University, Tokyo, Japan *Feb. 2017*
The international center, mita campus.

B. Eng., Sichuan University, Sichuan, China *Sep. 2013 -- Jul. 2017*
Electronics and Information Engineering (**EE**); **GPA:** 84.7/100; **Rank:** 6/121

Publication

Paper (* indicates equal contribution)

- **S. Lin***, J Wang*, R. Peng, W. Yang (2019). "Development of an Autonomous Unmanned Aerial Manipulator Based on a Real-Time Oriented-Object Detection Method." *Sensors* (IF: 3.302), *19*(10), 2396.
- H. Yu, **S. Lin**, J Wang, K. Fu, W. Yang. "An Intelligent Unmanned Aircraft System for Wilderness Search and Rescue." *International Micro Air Vehicles Conference and Flight Competition (IMAV)*, 2017, **oral**.
- X. Wang, Y. Du, **S. Lin**, P. Cui, Y. Shen, Y. Yang. "adVAE: a Self-adversarial Variational Autoencoder with Gaussian Anomaly Prior Knowledge for Anomaly Detection." *Knowledge-Based Systems*, accept.

Manuscript (* indicates equal contribution)

- **S. Lin**, F. Xu, X. Wang, W. Yang, L. Yu. "Efficient Spatial-Temporal Normalization of SAE Representation for Event Camera." *IEEE Robotics and Automation Letters (RA-L)*, revision, resubmit.
- F. Xu*, **S. Lin***, W. Yang. "Cross-Modal Matching Between Neuromorphic Events and Color Images via Adversarial Learning." *AAAI Conference on Artificial Intelligence*, under review.
- F. Xu, W. Yang, **S. Lin**, H. Luo, G. Xia "Mental Retrieval of Remote Sensing Images via Adversarial Sketch-Image Feature Learning." *IEEE Transactions on Geoscience and Remote Sensing*, under review.
- **S. Lin***, F. Xu*, W. Yang. "MCED: A Multi-view Color Images and Event-Stream Dataset for Object Classification and Retrieval." *Frontiers in Neuroscience*, under preparation.

Patent (5 in total)

- **S. Lin**, W. He, H. Yu, W. Yang. "A Multifunctional Unmanned Aerial Vehicle for Field Search and Rescue."
  - Patent No. CN206926823U, Jul. 2017.

Report

- **S. Lin**. "Event-based Vision: Hardware to Software, Formulation to Methodology, and Past to the Future." Group Meeting of Signal Processing Lab, Jan. 2019.

Scholarship

- National Scholarship for Postgraduate **(TOP 1%)** -- Awarded by ministry of education, PRC. *Oct. 2018*
- *1st Prize*, Postgraduate Academic Scholarship of Wuhan University **(TOP 5%)** *Sep. 2018*
- *1st Prize*, Postgraduate Academic Scholarship of Wuhan University **(TOP 5%)** *Sep. 2017*
- *1st Prize*, Outstanding Scholarship of Sichuan University **(TOP 5%)** *Oct. 2016*
- *1st Prize*, Individual Scholarship of Sichuan University **(TOP 8%)** *Nov. 2015*

Research Experience

Postgraduate Researcher, supervised by Prof. Weng Yang *Sep. 2017 -- Present*
Signal Processing Lab, Wuhan University, China

- Research: **Cross-Modal Retrieval Between Neuromorphic Events and Color Images.**
  - Exploited adversarial learning to bridge the gap between color images and neuromorphic events, then retrieve high-quality color images based on the learned cross-domain representation.
- Research: **Efficient Spatial-Temporal Normalization of SAE Representation for Event Camera.**

  - Proposed methods can run up to **500 times faster** than the state-of-the-art.
  - Designed an end-to-end classifier with proposed normalization method, and its accuracy is **19% higher** than that of the previous event-based SOTA classification method. Paper submitted to *RA-L*.
- Research: **Toward Autonomous Rotation-Aware Unmanned Aerial Grasping**
  - Proposed Rotation-SqueezeDet, an efficient detection algorithm based on light Convolutional Neural Network (CNN) that can detect objects with rotation angles in **real-time**.
  - Built an Unmanned Aerial Manipulator (UAM) from scratch and employed proposed detection algorithm to enable rotation-aware grasping. Paper accepted by *Sensors* (IF: 3.302).
- Competition: **ICRA2018 DJI Robomaster AI Challenge**, Australia, Brisbane.
  - My work focused on the development of **two fully autonomous** combat robots, including hardware design, localization, communication, and visual tracking.
  - The system works well in the ICRA arena. We defeated many competitors and got 6/70 final ranking.
- Thesis: **Development of an Intelligent Unmanned Aircraft System for Tunnel Inspection**
  - Conducted multiple autonomous inspections in the 280-meter long Luojia Shan tunnel.

Research Assistant, supervised by Prof. Hui Zhao and Prof. Jiaping Xu. *May. 2014 -- May. 2017*
Texas Instruments Joint Student Innovation Lab, Sichuan University, China

- Competition: **National Undergraduate Electronic Design Competition** -- Autonomous quadrotor.
  - My work focused on the development of algorithms for autonomous flying, including controller design and visual tracking. The drone tracked lines and junctions as visual feedback; And used cascade PID controller for robust flying. We defeated 2000+ competitors and got the 1st Prize.
- Thesis: **Pedestrian Detection Under UAV Perspective** -- Excellent Undergraduate Thesis.
  - Improved the SSD for pedestrian detection by using the residue neural network. And algorithms were integrated into the field search and rescue aerial system. Paper accepted by *IMAV* conference.

Other Experience

- Attend the **Summer School of Simultaneous Localization and Mapping (SLAM)** held by CAD&CG State Key Lab, Zhejiang University. Zhejiang, China, Jul. 2018.
- Attend the **Seminar of Frontier Deep Learning Research** held by CCF. Hubei, China, Nov. 2017.

Award

Competition:

- *1st Prize & Best paper*, National Postgraduate Electronic Design Competition **(TOP 0.2%)** *Aug. 2018*
- *Finalist Prize*, ICRA2018 DJI Robomaster AI Challenge **(Global Rank: 6/70)** *May. 2018*
- *1st Prize*, Microsoft Imagine Cup 2016 Global Students Technology Competition **(TOP 1%)** *Apr. 2016*
- *1st Prize*, National Undergraduate Electronic Design Competition **(TOP 1%)** *Aug. 2015*

Others:

- Excellent Postgraduate Student of Wuhan University *Dec. 2018*
- Excellent Undergraduate Thesis of Sichuan University *Jun. 2017*
- Outstanding Academic Student Group Leader of Sichuan University *Jul. 2015*

Skill

English:

- **TOEFL iBT:** 92 (Reading - 25, Listening - 24, Speaking - 23, Writing - 20)

Software Related:

- **Languages:** C/C++, Python, MATLAB, LaTeX, *etc*.
- **Development:** Git, Shell, ROS, Linux, ARM Platform, *etc*.
- **Framework:** Tensorflow, PyTorch, caffe, Scikit-Learn, OpenCV, PCL, *etc*.

Hardware Related:

- **Hardware:** Jetson TX1/TX2, 8051/ARM/X64/X86 Platform, APM/PX4/Pixhawk, DJI Drones/Robot, Structure/Circuit Design, 1D/2D/3D Rangefinder, RGBD/RGB/Event/Infrared Camera, IMU, *etc*.