

Rex Ruijun Zhang

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<https://rexruijunzhang.github.io/info/>

Education

University of Pennsylvania, Master in Robotics GPA: 3.78/4.0 Sept 2023 – Present

- **Coursework:** Machine Perception A+, Computer Vision and Computational Photography A, Foundation of Engineering Math A+

Wuhan University, B.E. in Electronic Engineering GPA: 3.89/4.0 Sept 2019 – May 2023

- **Coursework:** Computer Architecture A, Information Theory A, Digital Signal Processing A

Research Interest

- Computer Vision, 3D Perception, Low-latency Perception, SLAM, Event-based Vision, Neuromorphics

Research

Motion-Equivariant Event-based Feature Descriptor Dec 2024 – Present

University of Pennsylvania, directed by Prof. Kostas Daniilidis

- Address pattern variability of event data caused by motions with group-convolutional neural network (G-CNN)
- Collect an event-based dataset for feature tracking and matching with paired image data to annotate matching pairs

Event-based Human Pose Estimation with Human Motion Priors May 2024 – Nov 2024

University of Pennsylvania, directed by Prof. Kostas Daniilidis

- Introduced first event-based continuous-time human motion field leveraging neural human motion priors
- Conducted experiments with state-of-the-art methods of both event-based and frame-based solutions
- Collected an event-based human motion dataset consists 160 sequences with 40 activities and 120 FPS SMPL annotations

Event and RGB data fused Visual Inertial Odometry Jan 2023 – Jun 2023

Wuhan University, directed by A/Prof. Huai Yu

- Proposed an asynchronous event-based feature tracker EvWave utilizing Speed-invariant Timesurface
- Constructed VIO framework utilizing FA-Harris event feature detection, proposed EvWave event feature tracking algorithm and a hybrid BA backend for data fusion
- Verified that in scenes with poor lighting conditions, the proposed VIO algorithm is better than RGB-only VIOs on translation error and rotation error

Medicine Delivery robots Design with Digits Recognition Nov 2021 – Dec 2021

“TI Cup” National Undergraduate Electronics Design Contest directed by A/Prof. Cien Fan

- Designed two robots with path tracking, collision detection and path selection based on digit recognition using Yolo-v3 to deliver medicine to specified positions
- Won first place (5%) in “TI Cup” National Undergraduate Electronics Design Contest, 2021

Publications

Continuous-Time Human Motion Field from Events Nov 2024

Ziyun Wang, **Ruijun Zhang**, Ziyang Liu, Yufu Wang, Kostas Daniilidis

<https://arxiv.org/abs/2412.01747>

Internship

Software Engineer, VMware – Beijing, China Sept 2023 – May 2023

- Participated in the backend development of *Softx*, an online paper reading and sharing software for researchers, using Django to build backend structure and managing data in MySQL database
- Built an IOS app for the software
- Partook in *VMware Borathon*, built a Multi-cloud API Gateway prototype, enabling API connections management for integrated online AI software, won *Committee Grand Award* (1st out of 36)

Teaching

Teaching Assistant, CIS 5800 Machine Perception, University of Pennsylvania

Sept 2024 – Dec 2024