Kevin Chen

Spatial AI & On-Device ML Systems Engineer

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Summary

- Senior computer vision engineer with 8+ years of experience building real-time spatial AI systems across SLAM/VIO, 3D mapping, learned visual features, and on-device ML. Strong C++ and Python background spanning research pipelines, evaluation infrastructure, and deployment on resource-constrained XR and AI devices.

Experience

OPPO US Research Center, Senior Computer Vision Engineer — Palo Alto, CA
3D mapping, robust localization, and real-time vision for XR and AI devices. — Oct 2021 – present — 4 years 11 months

- Tech lead for multi-camera and IMU VIO/SLAM, delivering real-time state estimation under strict latency and power constraints with cm-level ATE on long sequences.
- Co-authored ActiveGAMER (CVPR 2025) and built its data preprocessing plus reproducible training and evaluation pipeline for Gaussian scene representations.
- Trained and integrated a learned keypoint and descriptor frontend, including quantized on-device inference and regression evaluation for matching and tracking stability.
- Built depth and TSDF reconstruction pipelines, open-vocabulary localization integrations, and system validation tooling for mapping quality and drift.
- Profiled and optimized memory, CPU parallelism, and data flow while moving algorithms from research prototypes to mobile devices.

OPPO US Research Center, Computer Vision Engineer — Palo Alto, CA
SLAM frontend and mobile computer vision systems. — Sept 2018 – Sept 2021 — 3 years 1 month

- Implemented feature tracking, matching, pose estimation, and camera-model support for monocular, stereo, and multi-camera AR pipelines.
- Built plane and surface understanding modules from SLAM maps and depth images for AR interaction.
- Optimized core computer vision components with ARM NEON and x86 SIMD for constrained mobile SoCs.
- Developed a reusable C++ computer vision library shared across multiple product and research pipelines.

University of Michigan Ford Center for Autonomous Vehicles, Research Assistant — Ann Arbor, MI — May 2017 – Dec 2017 — 8 months

- Developed a multi-object tracking system combining RGB cameras, LiDAR, Kalman filtering, object detection, and re-identification.

National Tsing Hua University Vision Science Lab, Research Assistant — Hsinchu, Taiwan — Sept 2014 – Aug 2015 — 1 year

- Built a large-scale Structure-from-Motion and trajectory-alignment framework for dashcam localization and street-view change detection.

Education

M.S. **University of Michigan**, Electrical and Computer Engineering - Computer Vision and Artificial Intelligence — Ann Arbor, MI — Sept 2016 – Apr 2018

- Developed a GAN-based light-field depth estimation project with faster processing and 90% data reduction.

B.S. **National Tsing Hua University**, Electrical Engineering — Hsinchu, Taiwan — Sept 2011 – June 2015

- Academic Achievement Awards, 2013-2015.

Skills

Languages: C, C++, Python, Matlab, Java, JavaScript

Spatial AI: SLAM, VIO, multi-view geometry, camera calibration, 3D reconstruction, TSDF, Gaussian representations

CV and ML: PyTorch, TensorFlow, OpenCV, Eigen, ROS, PCL, learned features, vision-language models

Systems: profiling, latency and memory optimization, ARM NEON, CPU and DSP parallelism, quantization, Android

Infrastructure: Git, Linux, Docker, Jenkins, AWS, REST APIs, SQL

Publications

ActiveGAMER: Active GAussian Mapping through Efficient Rendering 2025
Liyan Chen, Huangying Zhan, Kevin Chen, Xiangyu Xu, Qingan Yan, Changjiang Cai, Yi Xu
openaccess.thecvf.com/content/CVPR2025/html/Chen_ActiveGAMER_Active_GAussian_Mapping_through_Efficient_Rendering_CV
(IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR))

Stereo-NEC: Enhancing Stereo Visual-Inertial SLAM Initialization with Normal Epipolar Constraints 2024
Weihan Wang, Chieh Chou, Ganesh Sevagamoorthy, Kevin Chen, Zheng Chen, Ziyue Feng, Youjie Xia, Feiyang Cai, Yi Xu, Philippos Mordohai
doi.org/10.1109/ICRA57147.2024.10611458 (IEEE International Conference on Robotics and Automation (ICRA))

The World Is Changing: Finding Changes on the Street 2016
Kuan-Ting Chen, Fu-En Wang, Juan-Ting Lin, Fu-Hsiang Chan, Min Sun
doi.org/10.1007/978-3-319-54407-6_28 (ACCV Workshop on Computer Vision Technologies for Smart Vehicle)

Patents

2024: An Object Search System using 3D Language Field

2024: System and Method for Optical-Flow Prediction via Knowledge Transferring from Large Vision Models

2023: Exposure Control to Handle Tracking and Stereo Matching for Multi-Camera VIO/SLAM System

2022: An Indoor Wi-Fi Access Point Localization Method using VIO/SLAM

2020: Method and System for Adaptive Feature Detection for VSLAM Systems