Alex Zihao Zhu

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EXPERIENCE

Waymo LLC. <div style="float:right">Mountain View, California</div>
Staff Research Scientist <div style="float:right">Jan 2020-Current</div>

- **Developing perception foundation models for autonomous driving**.
  - Leading 5+ FTEs in an effort to integrate world knowledge from external vision-language foundation models into our internal perception models to improve performance and unlock open-vocabulary generalization.
  - Working on scaling, distilling, and deploying onto our vehicles, foundation models trained on extremely large scale driving data.
- **TL for model development of Waymo's onboard segmentation stack**.
  - Developing new machine learning models to improve the overall system, and address challenging edge cases, as well as incorporating them into large multi-task models and ultimately deploying them onboard with an eye on latency and overall system performance.
  - Led a team of 8+ FTEs in the deployment of features which are now the primary segmentation pipeline for all of Waymo's vehicles, improving previous segmentation performance by $> 20\%$ and retiring the pre-existing heuristics based system without any significant latency impacts.
- Published numerous papers at top conferences, and led the development and hosting of the Waymo Open Dataset: 2D Video Panoptic Segmentation challenge at CVPR 2023.

Zoox Inc. <div style="float:right">Menlo Park, California</div>
3D Perception Intern
- Developed a nonlinear optimization algorithm for 3D tracking of objects from multiple sensing modalities, such as cameras, lidar and radar, for autonomous vehicles.

EDUCATION

University of Pennsylvania <div style="float:right">Duke University</div>
PhD, Computer and Information Science '19   *Bachelor of Science in Engineering, magna cum laude*
MSE, Robotics '16   ECE, Computer Science
Advisor: Dr. Kostas Daniilidis   Robertson Scholar, Class of 2014

SELECTED PUBLICATIONS

For the most up to date and full list of publications, please check Google Scholar.

- Z. Xiao, L. Jing, S. Wu, **A.Z. Zhu**, J. Ji, C.M. Jiang, W.C. Hung, T. Funkhouser, W. Kuo, A. Angelova, Y. Zhou, S. Sheng, **3D Open-Vocabulary Panoptic Segmentation with 2D-3D Vision-Language Distillation**, *ECCV 2024*
- **A.Z. Zhu**[*], J. Mei[*], S. Qiao, H. Yan, Y. Zhu, L.C. Chen, H. Kretzschmar, **Superpixel Transformers for Efficient Semantic Segmentation**, *IROS 2023*
- J. Mei, **A.Z. Zhu**, X. Yan, H. Yan, S. Qiao, L.C. Chen, H. Kretzschmar, **Waymo Open Dataset: Panoramic Video Panoptic Segmentation**, *ECCV 2022*
- **A.Z. Zhu**, V. Casser, R. Mahjourian, H. Kretzschmar, S. Pirk, **Instance Segmentation with Cross-Modal Consistency**, *IROS 2022*
- **A.Z. Zhu**, D. Thakur, T. Özaslan, B. Pfrommer, V. Kumar, K. Daniilidis, **The Multi Vehicle Stereo Event Camera Dataset: An Event Camera Dataset for 3D Perception**, *RAL 2018*
- **A.Z. Zhu**, L. Yuan, K. Chaney, K. Daniilidis, **EV-FlowNet: Self-Supervised Optical Flow Estimation for Event-based Cameras**, *RSS 2018*, **Best Student Paper Award Finalist (3 of 71)**