Zhihui Wang

Profile

Date of Birth:1994.09.12 **work experience: 5.5** Years

Research direction: Computer Vision **Job seeking status:** Employed

Contact information: (+86)15601285212 **E-mail:** jillian_wzh@163.com

Work experience

Didi Senior algorithm engineer Map Division-Traffic Big Data-Visual Computing Group 2019.07 - present

Educational Background

2016.9-2019.6 Master Object tracking, object detection Dalian University of Technology

Advisor: Professor Wang Dong and Professor Lu Huchuan

2012.9-2016.6 Bachelor Information and Communications Engineer Dalian University of Technology

Project Experience

- **Didi Clairvoyance-Road Dynamic Event Mining**
  - Based on Didi's millions of driving recorders, we built a terminal + cloud road dynamic event mining system from 0-1, and participated in the formulation and implementation of the full-link technical solution;
  - **Mobile Device:** To address the computing power constraints of devices, lightweight networks such as ShuffleNet V2 and MobileNet V3 are used to build mobile feature recognition capabilities, and model performance is improved through model distillation, NAS and other model compression solutions;
  - **Cloud:** Adopting FCOS-based feature recognition, Swin Transformer-based scene understanding, and road structuring solutions based on road feature segmentation to build a server-side event truth judgment system;
  - **Data closed loop:** Build a data mining system that combines edge reporting + real-time collection + server verification + model optimization. Through the data closed loop, rapid evaluation and performance optimization of small edge models can be achieved.
  - **Business benefits:** Mobile modelA53superiorCPUUtilization<5%, Accident Identification Accuracy98%+, achieving fully automated production; control events are online on average every day5000+, data quality≥ 95%, average daily online construction volume1.5w, data quality≥90%, both ahead of competitors.
- **Mobile deployment of the visual odometry AI model Project leader of two members**
  - Assist in building AI models to accelerate the visual odometry in crowdsourcing mapping processes;
  - In-depth analysisFeature point extraction algorithm(Superpoint)and feature matching algorithm(SuperGlue)Based on the algorithm characteristics and time consumption of each module, backbone optimization, Transformer lightweighting, TensorRT quantization, computational graph optimization and other solutions are used to improve model efficiency;
  - Business benefits:SUperpointTime from531msOptimize to10.5ms, speed up50times+;SUperglueTime from1725msOptimize to29ms, speed up59times+Compared with the large model, the reconstruction error of the lightweight model is50Within cm to meet business needs.
- **Multimodal scene recognition Project leader of two members**
  - Investigate the application of big visual models in business scenarios;
  - Use multimodal models such as EVA-CLIP-E and Intern VL to mine traffic accident scenes;
  - Business benefits: Accurate call rate for accident mining is 95%+/90%, and the call is automatically

launched;

- **HD-Map Boundary Style Recognition** **Project leader of two members**
  - Build lane-level map boundary style recognition and update capabilities from 0 to 1;
  - Based on the lane detection model and road feature segmentation model, the system analyzes various boundary characteristics, identifies the style intelligence of the left, right, shoulder and middle lanes, and assists in the production of lane-level map data. It actively mines style updates using tens of millions of images collected daily, and improves the conversion rate of updated intelligence through the secondary collection process.
  - Business benefits: The existing intelligence can be automatically written into the right side and shoulder styles, with an automation rate of 30%, saving 8 man-days of labor costs; the conversion rate of updated intelligence is 40%+;
- **Other business**
  - **Multi-factor detection fusion:** Adopting the Hydranet architecture, it integrates multiple factors such as traffic sign, vehicle information, electronic eye and traffic light recognition;
  - **SD prohibition sign data mining:** responsible for the business production of hundreds of domestic and international prohibition signs, mainly responsible for model iteration, data mining and business empowerment of detection and classification models;
  - **Desensitization of collected images:** responsible for mining sensitive areas of collected images, mainly mining sensitive road areas through target detection and OCR;

Patents and Publications

- Decoupling with Entropy-based Equalization for Semi-Supervised Semantic Segmentation **IJCAI-2023**
- 2nd Place Solution for Waymo Open Dataset Challenge-Real-time 2D Object Detection **CVPR WS-2020**
- Robust and Fast Vehicle Turn-counts at Intersections via an Integrated Solution from Detection, Tracking and Trajectory Modeling **CVPR WS-2019**
- Online Single Person Tracking for Unmanned Aerial Vehicles: Benchmark and New Baseline **ICASSP-2019**
- Online Vehicle Tracking in Aerial Imagery **IScIDE-2017**
- Traffic accident recognition method, device, electronic device and medium **ID: CN112926575A**
- Vehicle counting method and system, data processing equipment and intelligent shooting equipment **ID: CN111652912B**
- Method and apparatus for presenting road information **ID: WO2022156553A1**
- Method and device for detecting bus lane, electronic equipment and storage medium **ID: CN112733793A**

Awards

2022 Beijing Middle Surveyor

2021 Didi Technology Co., Ltd. - Map and Public Transportation Team - Polaris Star Award

2019 Didi Technology Co., Ltd. - Map and Public Transportation Team - Shining Star Award

2016-2018 **National Level Graduate Fellowship**, **National Level Graduate Scholarship**

2016 Dalian Lingshui Scholarship, Outstanding Graduate of Dalian University of Technology

2012-2016 Dalian University of Technology Study Scholarship