Xiangtian Li

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EDUCATION

- **University of California San Diego** — La Jolla, CA
  Master of Science - Machine Learning and Data Science; GPA: 3.78 — *Sept. 2021 - March 2023*
  Courses: *Introduction to Visual Learning, Statistical Learning, GPU Programming, Searching and Optimization*

- **Zhejiang University** — Hangzhou, China
  Bachelor of Science - Information and Computing Science; GPA: 3.80 — *Sept. 2017 - June 2021*
  Courses: *Data Structures, Efficient Algorithms and Intractable Problems, Computer vision, Database System*

SKILLS SUMMARY

- **Languages**: Python, C++, CUDA, Java, JavaScript, Bash, Go, HTML/CSS, SQL, Latex, Markdown
- **Frameworks & Tools**: Git, PyTorch, TensorFlow, Node.js, CMake, React, Spark, MySQL, Docker
- **Computer Vision**: Video Prediction, GAN, Computational Photography, Image generation

EXPERIENCE

- **XSense.ai Inc.** — San Diego, CA
  Behavior Prediction Machine Learning Engineer Intern — *Jan 2022 - Present*
  - **Multi-modality Evaluation**: Design three metrics to evaluate the multi-modality of predicted trajectories.
    * Calculated the *average number of distinct final lanes* reached to measure the lateral diversity of trajectories.
    * Implemented *minLaneFDE* to evaluate the coverage rate of trajectories for the possible lanes on the map, achieving an *minLaneFDE* of 9.358m on a test dataset.
    * Defined a new evaluation metric that captures diversity in predictions: the ratio of *avgFDE* to *minFDE*. This metric is robust to variability in the magnitude of velocity in predictions.
  - **Waymo Open Dataset Benchmark Training**:
    * Developed a WaymoOpenDataset class to extract raw tracks and map information data into a vectorized format, enabling more efficient and effective analysis of the data.
    * Integrated the new dataset class into an existing Wayformer framework and trained the model from scratch using 16 A100 GPUs.
    * Achieved a top 10 ranking on the benchmark leaderboard for the evaluation results of the pre-trained model, demonstrating the effectiveness of the Wayformer model and training methodology.

- **Nissan North America Inc - Alliance Innovation Lab** — Silicon Valley, CA
  Research Intern, Autonomous Systems — *Jun 2022 - Sept. 2022*
  - **Trajectory Prediction**: Predict vehicle future trajectory with rasterized and vectorized representation.
    * Employed an anchor-free and end-to-end model for multi-trajectory prediction based on the structural information of Argoverse HD maps into the vectorized manner.
    * The model reached a *minADE* of 0.816m and a *missing rate* of 7.19%.
    * The vectorized model is integrated into the autonomous driving system, and replaces the previous rule-based method. It performed more accurate predictions in the autonomous driving demo.
  - **HD Map Construction**: Generate Surrounding HD map in real time.
    * Collaborated with map team, developed a framework to efficiently construct HD maps using camera images.
    * Trained the model on nuScenes dataset and deployed it on autonomous vehicle for online map generations.
    * The model achieved an *IoU* of 40.2% and an *error distance* of 0.782m. The model will allowed the car to drive on roads without the HD map information.

SELECTED PROJECTS

- **Course Project**: Relational Database [website] — *March 2022 - Jun 2022*
  - Applied Model View Controller (MVC) design pattern to develop a relational database application.
  - Devised a block-based storage system to store the database information. Utilized type-streams to load and write the rows records. Constructed index blocks to efficiently respond to the search query.
  - The database system was incorporated to existing interface and worked stably in the course management system.