Parth Khopkar

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Experience

Toyota North America May 2024 - Present
Sr. Machine Learning Engineer | Contract *Plano, Texas*

- Leading development of computer vision models for part detection and rust severity classification in vehicle underbody scans, enabling assessment of 100x more vehicles annually compared to manual inspections.
- Designing and maintaining the end-to-end model pipeline architecture supporting both batch and near real-time inference for up to 30,000 vehicle scans per year.
- Developing auxiliary models to filter edge cases such as presence of dirt, blurry crops, and low-light images which helped filter out ∼10% of unreliable image data, improving analytics accuracy and model reliability.
- Driving deployment and MLOps integration, implementing automated retraining, model monitoring, and scalable inference to support higher data volumes and faster iteration cycles.

Radius AI January 2023 - May 2024
Data Scientist *Bellevue, Washington*

- Worked on the development of an edge video analytics system that generates real-time data and alerts for operations across 1000 convenience store locations.
- Worked on the complete life-cycle for a food tracking and customer action recognition product from POC to deployment in production and validation of resulting business metrics which helped reduce food wastage by 15%.
- Led data science efforts working in a cross-functional team to rapidly prototype models for new pilot store use cases along with monitoring the performance of existing models and fine-tuning them which resulted in the client expanding the pilot from 3 stores to 30 stores.

Micron Technology, Inc. July 2021 - January 2023
Machine Learning Engineer | Deep Learning Accelerator Team *Seattle, Washington*

- Worked on inference optimization, ML research, and SDK development for Micron's Deep Learning Accelerator (DLA) which enables power-efficient inference at the edge.
- Developed a real-time driving gaze detection demo that involved optimizing a three network pipeline for product showcases at international conferences.
- Wrote ONNX backend tests to verify ONNX operators work on the DLA according to specification which led to multiple critical bug fixes.
- Worked on research to optimally schedule instructions for Micron's Coarse Grained Reconfigurable Array (CGRA) architecture using Reinforcement Learning which yields schedules that are 10% faster than existing methods.

Interactive Robotics Lab at ASU August 2020 - June 2021
Research Assistant | Advisor: Dr. Heni Ben Amor *Tempe, Arizona*

- Researched Graph Neural Network(GNN) based methods for coordination of multi-agent systems showing their robust scaling and perception noise resistance capabilities.
- Worked on zero-shot transfer of Imitation Learning trained GNN controller based on the Boids model to a PyBullet based multi-quadrotor simulator.
- Awarded funding for research on multi-agent systems by ASU's Master's Opportunity for Research in Engineering (MORE) program.

Education

Master of Science in Computer Science May 2021
Arizona State University | GPA: 4.0/4.0 *Tempe, Arizona*
Thesis: Control and Coordination of Multi-Drone Systems Using Graph Neural Networks (thesis | slides)

Bachelor of Engineering in Computer Science June 2019
Medi-Caps Institute of Technology and Management (RGPV) | GPA: 8.3/10 *Indore, India*

Skills

- **Languages**: Python, C++, Java, MATLAB, HTML, SQL, JavaScript, R, Rust, Bash
- **Frameworks**: PyTorch, Tensorflow, ONNX, Snowflake, MongoDB, ROS, Bootstrap, Android, D3.js, Flask, Django, LaTeX
- **Tools**: Git, Docker, Kubernetes, Linux, Jira, AWS, Azure, GCP, Sagemaker

Publications

- Reinforcement Learning Approach for Mapping Applications to Dataflow-Based Coarse-Grained Reconfigurable Array, arXiv
- Mixed-Initiative Flexible Autonomy in Drone Swarms for COVID-19 Applications, ISTAS 2020

Certifications

- Generative AI with Large Language Models | Neural Networks and Deep Learning | Structuring Machine Learning Projects