Parth Khopkar

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Experience

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

- Working on inference optimization, ML research, and SDK development for Micron's Deep Learning Accelerator (DLA) which enables power-efficient inference at the edge.
- Analyzing inference optimization opportunities by using Block Floating Point (BFP) quantization and pruning strategies.
- 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 control and coordination of multi-agent systems through Imitation and Reinforcement Learning.
- 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.

Sensagrate June 2020 - August 2020
Computer Vision Intern *Scottsdale, Arizona*

- Developed real-time object detection applications using computer vision models (MobileNet SSD and YOLOv3) for smart transportation which achieved 90% detection accuracy.
- Optimized developed applications for edge devices (Jetson Nano and TX2), achieving real-time speed of 30 FPS on camera streams.
- Contributed to cloud infrastructure set up which used Microsoft Azure for machine learning development workflows.

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)
Coursework: Intro to AI, Mobile Computing, Foundations of Algorithms, Robot Learning, Data Visualization

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

Projects

Intelligent Interactive Visualization Spring 2020
Arizona State University

- Created an interactive visualization for flowering plants from SEINet . Mined text and images for 5800 plants, categorized them according to flower color using k-means algorithm and then performed visualization using D3.js and Leaflet.

Online Service for Detection of Sign Language in Videos Fall 2019
Arizona State University

- Created an online RESTful API service hosted on AWS EC2 that used ML to classify videos showing hand signs from the American Sign Language(ASL) to enable people with speech impairments to communicate with smart assistants. Used TensorFlow's PoseNet model to extract skeletal key points, achieving 72.97 % accuracy.

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

Skills

- **Languages**: Python, C++, Java, MATLAB, HTML, SQL, JavaScript, R, Rust, Bash
- **Frameworks**: PyTorch, Tensorflow, ONNX, MongoDB, ROS, Bootstrap, Android, D3.js, Flask, Django, LaTeX
- **Tools**: Git, Docker, Linux, Jira, AWS (S3, EC2), Azure, GCP