

## EXPERIENCE

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### Nuro

Mountain View, CA

Technical Lead Manager, Perception

Dec 2021 - Present

- Managed a 5-person team responsible for object tracking and fine-grained attribute classification.
- Lead the deployment of a new ML-based object tracker which reduced vehicle/pedestrian/cyclist false negatives by **40-60%**, decreased false positives by **72%**, and improved vehicle reaction time by **100ms** - key to achieving a company-wide deployment milestone.
- Initiated and lead work on two long-tail initiatives - **out of distribution** scene/object detection using generative ML (normalizing flows), and jointly learning **trajectory prediction** with tracking.
- Actively involved in **hiring** - advised on headcount planning, drafted job descriptions for recruiters, established an interview loop and set best practices.

Machine Learning Engineer

Jul 2019 - Dec 2021

- Built the fine-grained track attribute classification ML model** from the ground up, and evolved it into a mature component with **over 40 outputs used** downstream.
- Responsible for the entire **MLOps lifecycle** - data labeling, feature extraction pipelines, model input and architecture design, model evaluation, on-vehicle deployment and active learning for continuous improvement.
- Deployed models under strict latency ( $\leq 100\text{ms}$ /inference) and memory constraints by writing highly **optimized C++ code** to minimize pre- and post-processing overhead, and using model optimization tools like TensorRT.
- Established a fully-automated continuous improvement pipeline using **active learning** to mine for important scenes from on-road testing, label them, and retrain a model with this new data.

### Robotics Institute, Carnegie Mellon University

Pittsburgh, PA

Graduate Research Assistant with Prof. Katia Sycara

Sept 2017 - May 2019

- Pioneered research on multi-agent reinforcement learning for robot swarms, using **masked attention** to model decentralized inter-agent communication under **partial observability**, and demonstrated state of the art **zero-shot transfer** to new objectives, as well as robustness to failure. See the Publications section.
- Conducted research to improve visually grounded natural language dialog between two agents.

### Agilo Technologies

Kanpur, India

Co-Founder and CTO

Aug 2015 - Dec 2016

- As part of a 4-member team, contributed to the development of [evive](#), an Arduino MEGA-based DIY electronics tool featuring an incorporated oscilloscope, voltage/current sensing, and a user-friendly plug-and-play interface.
- I designed a cost and volume-optimized motherboard, routing and placing over 100 components for manufacturing.
- [Crowdfunded](#) the initial manufacturing of evive, garnering \$45K USD from 350+ backers across 33 countries. The product was successfully manufactured in both China and India and promptly delivered to customers.

## EDUCATION

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### Carnegie Mellon University

Pittsburgh, USA

Master of Science in Robotics; GPA: 4.13

Aug 2017 - May 2019

### Indian Institute of Technology, Kanpur

India

Bachelor of Electrical Engineering; GPA: 9.4/10.0

July 2013 - May 2017

## SELECTED PUBLICATIONS [\[LINK\]](#)

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- **Learning Transferable Cooperative Behavior in Multi-Agent Teams** [\[Paper\]](#) — [Code](#)  
Akshat Agarwal\*, Sumit Kumar\*, Katia Sycara  
*Proceedings of the 19th International Conference on Autonomous Agents and Multi Agent Systems (AAMAS) 2020*
- **Community Regularization of Visually Grounded Dialog** [\[Paper\]](#) — [Code](#)  
Akshat Agarwal\*, Swaminathan Gurumurthy\*, Vasu Sharma\*, Mike Lewis, Katia Sycara  
*Proceedings of the 18th International Conference on Autonomous Agents and Multi Agent Systems (AAMAS) 2019*

## SKILLS

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C++, Python, Tensorflow, Pytorch, Machine Learning, Computer Vision, Sequence Modeling, Reinforcement Learning, OOD