Prabhasa Kalkur

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GitHub, LinkedIn, Webpage

SUMMARY

Graduate Student with experience in machine learning looking for full-time roles starting Feb 1, 2021.

EDUCATION

Texas A&M University, College Station, Texas, USA **Dec 2020**
Master of Science in Electrical Engineering **GPA:** 3.9/4.0

R.V. College of Engineering, Bengaluru, India **May 2016**
Bachelor of Engineering in Electronics and Communication **GPA:** 4.0/4.0

SKILLS

Programming Languages and Tools: Python | SQL | C | R | MATLAB | Git | Tableau
ML Frameworks and RL Libraries: PyTorch | Keras | Scikit-Learn | TensorFlow (TF) | Stable Baselines 2.0 | RLLib

WORK EXPERIENCE

Learning from Demonstrations: Applications to Autonomous UAV Landing & Minecraft, Oct 2019 – Oct 2020
Master's Thesis under Prof. Dileep Kalathil, Dept. of ECE, Texas A&M University, USA

- Learn behaviors of sparsely rewarded systems using sample-efficient imitation learning methods.
- Captured a pilot's intuition behind navigating drones onto a ship deck simulated in Microsoft AirSim.
- Designed a novel method of autonomous UAV landing using human demonstrations (Python, TF).
- Achieved imitation accuracy of 84% with just 10 demos of the task, visualization available here.

Project Assistant, Code Design and Analysis Lab, Indian Institute of Science, India, Nov 2017 – July 2018

- Routing and task-scheduling of robots for simultaneous pickup and delivery of goods, in simulation.
- Performance comparison of metaheuristic algorithms on vehicle routing problem variants (Python).
- Demonstrated 2x reduction in the traversal of 12 vehicles to pick and deliver goods at 50 locations.

Project Assistant, Signal Processing & Comms Lab, Indian Institute of Science, India, July 2016 – Oct 2017

- Addressed 'uncertainty' of device self-localization in indoor environments, using reference beacons.
- Performed Monte Carlo studies to show an exponential reduction in localization uncertainty (MATLAB).
- Attained >96% accuracy with <1% uncertainty in localizing within a 10mx10m area using 5 beacons.

PROJECTS

Tracking COVID-19 Development In USA, Nov 2020

- Visualize trend and concentration of COVID-19 cases and deaths in US states (Tableau). Viz here.
- Observed rising trend in states with highest number of cases: California and Texas. Viz here.

MineRL Competition: NeurIPS 2020, Texas A&M University, USA, Aug 2020 – Nov 2020

- Identify & utilize sample-efficient algorithms paired with human demos to perform tasks in Minecraft.
- Outperformed vanilla RL algorithms by 10x on pairing them with the MineRL dataset (Python, PyTorch).

The Passive Chicken and Aggressive Car Problem, Texas A&M University, USA, May 2019 – Aug 2019

- Leverage pedestrian-vehicle interaction to induce 'passive-aggressive' behavior in autonomous vehicles.
- Employed Inverse Reinforcement Learning on a car model to recover pedestrian utility (Python).
- Pedestrian backs off, waits before proceeding, and the car accelerates/decelerates accordingly.

Classification Algorithms for Supervised Learning on Popular Datasets, TAMU, USA, Mar 2019 – Apr 2019

- Compared Bayes, k-NN classifiers on the Iris dataset, reached 99% accuracy (Python, Keras, Scikit-Learn).
- Implemented SVM, Neural Network classifiers on MNIST, medical datasets such as fMRI, EEG recordings.
- Improved accuracy over SVMs (sigmoid/RBF kernels, 93%) using NNs (3 layers, Adam, batch norm, 96%).

COURSEWORK

Analysis of Algorithms, Machine Learning, Reinforcement Learning, Graphical Models, Signals & Systems.