Prabhasa Kalkur

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SUMMARY

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

EDUCATION

Master of Science in Electrical Engineering, Texas A&M University, USA. **GPA:** 3.9/4.0 **Dec 2020**
B.E. in Electronics and Communication, R.V. College of Engineering, India. **GPA:** 4.0/4.0 **May 2016**

SKILLS

Languages & Tools: Python | NumPy | pandas | Matplotlib | MATLAB | SQL | Tableau | Git | C | C++ | R
ML Frameworks & RL Libraries: PyTorch | scikit-learn | Keras | TensorFlow | Stable Baselines 2.0 | RLLib

EXPERIENCE

Graduate Researcher, Department of ECE, Texas A&M University, Oct 2019 - Oct 2020 [GitHub]
Master's Thesis: "Learning from Demonstrations: Applications to Autonomous UAV Landing & Minecraft"

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

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

- Routing and task-scheduling of robots for simultaneous pickup and delivery of goods for Nokia's warehouses.
- Simulated performance of metaheuristic algorithms on several vehicle routing problem variants (Python).
- Demonstrated 2x time 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, July 2016 - Oct 2017

- Addressed 'uncertainty' of device self-localization in indoor environments using reference BLE 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

MineRL Competition: NeurIPS 2020 [GitHub]

- Identify algorithms that utilize readily available gameplay data sample-efficiently to perform tasks in Minecraft.
- Trained fD algorithms on the MineRL dataset to outperform vanilla RL algorithms by 10x (Python, PyTorch).

Classification Algorithms for Supervised Learning on Popular Datasets [GitHub]

- Implemented Bayes, k-NN classifiers with 78% accuracy on noisy Iris dataset (Python, Keras, scikit-learn).
- Compared SVM, Neural Network classifiers on noisy MNIST and medical datasets such as fMRI, EEG recordings.
- Improved classifier using rotated MNIST (SVMs: sigmoid, 89% and NNs: 3 layers, Adam, batch norm, 85%).

The Passive Chicken and Aggressive Car Problem [GitHub]

- 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.

Tracking COVID-19 Development in USA

- Visualized 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.

COURSEWORK

Analysis of Algorithms, Machine Learning, Reinforcement Learning, Probabilistic Graphical Models, Game Theory, Stochastic Systems, Linear Algebra, Probability Theory, Intro to Optimization, Real Analysis, Signals & Systems.

LEADERSHIP

Indian Graduate Student Association (IGSA): VP of Editorial & Mentoring, TAMU, Oct 2018 - May 2020.
ECE Graduate Student Association (ECE-GSA): External Officer, TAMU, Oct 2018 - Oct 2019. Article here.