SHASHANK SRIKANTH

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EDUCATION

Bachelors & Masters of Computer Science (**CGPA: 9.73 / 10.0**) 2016 - 2021
International Institute of Information Technology, Hyderabad

PUBLICATIONS

INFER: INtermediate representations for FuturE pRediction
Accepted as full paper at IEEE IROS 2019. Paper Link

Driving the Last Mile: Characterizing & Understanding Distracted Driving Posts on Social Networks
Accepted as a full paper at AAAI ICWSM 2020. Paper Link

EXPERIENCE

Research Intern July 2020 - Aug 2020
Relation Therapeutics *London, UK*

- Implemented transformers and resnet backbones for learning protein embeddings that were suitable for the task of contact prediction and secondary structure prediction
- Combined handcrafted Hidden Markov Model (HMM) features and pretrained BERT embeddings to surpass the state of the art in the task of protein contact prediction
- Integrated Ray Tune based Bayesian hyperparameter optimization with the codebase and achieved around 2x speedup by implementing distributed training & quantization using PyTorch Lightning & Nvidia Apex

Research Assistant May 2018 - Present
Robotics Lab, IIIT-H *Hyderabad, India*

- Developed a trajectory forecasting algorithm using utilized intermediate representations that could transfer well across unseen datasets with different weathers and lighting conditions. Leveraged a encoder-decoder architecture with ConvLSTMs and achieved state of the results on the KITTI dataset.
- Worked on path planning problems and achieved significant speedup in generating manipulator configurations and collision-free trajectories for autonomous vehicles by using implicit derivatives of parametrized argmin functions.
- Trained a deep network on the simualtor generated dataset to predict the driving actions using behavior cloning. Integrated this behavior planner with a local frenet-frame planner.

Research Intern July 2018 - July 2020
Precog Lab, IIIT-D *Delhi, India*

- Analyzed risk-taking behavior such as distracted driving on Snapchat from the lens of Lyng's edgework theory. Implemented a system to collect and classify over 6 million videos from Snapchat website using Selenium, cronjobs & Google Cloud API.
- Incorporated parallel processing to achieve around 10x speedup in Twitter data collection. Collected over 10 million tweets related to the 2019 parliamentary elections in India and analyzed these accounts for the presence of bots.

Software Engineering Intern Aug 2017 - Nov 2017
VLEAD, IIIT-H *Hyderabad, India*

- Built reproducible development environments using Vagrant and wrote shell scripts for auto-deploying the various micro-services used by the organization.
- Integrated 3 different micro-services to create an authoring platform, that allows end-users to create courses using only Markup.

SCHOLASTIC ACHIEVEMENTS

Huawei Scholarship Awarded the prestigious Huawei research fellowship worth INR 250,000 for excellence in research. Awarded to only 2 students across the batch.

Dean's Merit & Research List Awarded the dean's merit list for excellent performance in academics (Top 5% students) and dean's research list for excellence in research.

Google AI Summer school One of the around 100 students across India that was selected for attending the Google AI Research Summer school conducted during summer of 2020.

PROJECTS

Discrete Environment Cartpole Agent Nov 2019

- Implemented the paper "Deep Reinforcement Learning in Large Discrete Action Spaces" using PyTorch and PyFLANN library. Implemented a cartpole agent by extending DDPG algorithm to large discrete action spaces using k-nearest neighbour approximation.

Multimodal Hashtag Generation Nov 2019

- Designed and implemented a multimodal hashtag generation pipeline that suggests new hashtags for an Instagram post with images & text.
- The approach used CNNs for image classification and feature extraction, and glove-embeddings for recommending semantically similar hashtags.

Wikipedia Search Engine Sep 2019

- Implemented efficient and scalable search engine on Wikipedia data. Used multi-level indexing and used threading for the fast retrieval of documents.
- Used sorted indexes and offset tricks to improve the index creation time by over 2x. The search engine can query an index of over 50GB size in less than 1s.

ML for Materials Discovery Nov 2019

- Used unsupervised learning methods to generate feature vectors for molecules and compounds.
- Implemented a CNN to predict the critical temperature for these compounds using the generated feature representations.

Traffic Violations Portal April 2019

- Wrote scripts to collect over 3 million traffic violations receipt from the traffic portal of Ahmedabad police.
- Characterized spatial and temporal patterns in the above-collected data and presented the results using a web portal made using Django. Work was accepted as a publication at IEEE BigMM 2020 workshop.

Database Engine Nov 2018

- Implemented a mini SQL engine that supported various SQL operations like select, join & where clause.
- Additionally implemented recursion in the SQL engine to support nested SQL queries.

TunnelRush Game April 2018

- Implemented an arcade game (TunnelRush) using Javascript, WebGL & GLSL.
- Incorporated advanced lighting effects and ensured cross-compatibility across browsers.

Ultimate Tic-Tac-Toe Bot Feb 2018

- Built an AI bot for playing 4*4*4*4 ultimate tic-tac-toe using minimax and alpha-beta pruning algorithm. Additionally implemented Zobrist hashing, caching and iterative deepening search.

Bash Shell Nov 2017

- Developed a unix shell in C using POSIX system calls. Implemented features like killing a process, input/output redirection, piping and signal handling.