Prakhar Ganesh

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WORK EXPERIENCE

ADVANCED DIGITAL SCIENCES CENTRE (ADSC)
ILLINOIS AT SINGAPORE (UIUC)
Research Engineer (July '19 - Present)

EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY (IIT) DELHI
BTECH IN COMPUTER SCIENCE AND ENGINEERING
2015 - 2019 | Dep. GPA: 8.16/10.0
IIT-JEE All India Rank : 96 out of 1,17,231

LINKS

Scholar:// **Prakhar Ganesh**
Github:// **prakharg24**
HomePage:// **prakharg24**

SELECTED COURSES

Natural Language Processing | Machine Learning | Principles of Artificial Int. | Digital Image Analysis | Data Mining | Special Module in Artificial Int. | Special Module in ML | Intro to Parallel & Distributed Prog. | Computer Networks | Analysis & Design of Algorithms | Parallel Computing | Linear Algebra | Probability & Stochastic Processes

SKILLS

IMPLEMENTATIONS
Named Entity Recognition | Sentiment Analysis | Face Morphing & Swapping | EM in Bayesian Network | Clustering DBScan & OPTICS | Graph Partitioning GGGP | Decision Tree and Neural Network | Parallel 2D Matrix Sorting | MIPS architecture Simulator

TECHNICAL BLOGS
Time Series Analysis | AutoDL | Knowledge Distillation | Model Compression | Growing RNN cells | Automatic Lip Reading (ALR) | Twitter Information Network | Automatic Text Summarization | Object Detection | Convolution Kernels | Pose Estimation | Distributed Vector Representation

LANGUAGES
Python, C/C++, OCaml, prolog, VHDL, OpenMP, MPI, Pytorch, Tensorflow, Keras, PaddlePaddle, OpenCV, Sklearn, Numpy, Pandas, Git

RESEARCH PAPERS

- X Lou, C Tran, R Tan, D Yau, Z Kalbarczyk, A Banerjee, P Ganesh, **"Assessing and Mitigating Impact of Time Delay Attack: Case Studies for Power Grid Controls"**, *IEEE Journal on Selected Areas in Communications*, Accepted Oct '19
- P Ganesh, X Lou, Y Chen, R Tan, D Yau , D Chen, M Winslett, **"A Practical Learning-based Approach to Time Delay Attack Detection and Characterization in Cyber-Physical Systems"**, *IEEE Transactions on Smart Grid*, Submitted Dec '19
- P Ganesh, G Gupta, S Saini, K Paul, **"Nucl2Vec : Local Alignment of DNA sequences using Distributed Vector Representation"**, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Submitted July '19
- P Ganesh, P Rakheja, **"Very-Long Short Term Memory Networks (VLSTMs) in High Frequency Trading"**, *IEEE Transactions on Neural Networks and Learning Systems*, Submitted Sep '19

SELECTED INTERNSHIPS & MAJOR PROJECTS

Learning-based Solution for Protection against Time Delay Attacks
Jun'19-Present | ADSC, Illinois at Singapore

- Proposed a hierarchical LSTM network with multi-head output to process long data streams online and provide detection and characterisation results simultaneously.
- Designed a complete end to end solution which focuses on its practical implications.
- Achieved ∼68% decrease in error against the baselines with 1/3rd reaction latency.

Automated Bio-Mechanical Analysis in Sports
Jan'19-April'19 | Krida.AI

- Combined AlphaPose results from multiple cameras to measure several metrics like bat speed, bowler RPM, shot type and quality, bouncer detection etc. for cricket.
- Created an LSTM based automatic highlights generator on top of AlphaPose.

3D Human Pose Estimation and Tracking in Yoga Postures
Aug'18-Dec'18 | Prof. Rahul Garg, IIT Delhi

- Introduced a novel multi-modal deep learning architecture for 3D human tracking.
- Found solutions to tracking obscuring and unconventional body extensions in Yoga.
- Employed iterative limb length correction of predicted pose using a bayesian model.

Deep Learning in High Frequency Trading
May'18-July'18 | WealthNet Advisors

- Proposed a novel hybrid LSTM architecture, named VLSTM, capable of processing sequences with a few million data points by extracting 'multi-context' features.
- Exploited the limitations of existing deep learning research available in HFT.
- Achieved tremendous accuracy boost of ∼26% against a standard vanilla LSTM.

Encoding Methods in Genomics
May'17-Dec'17 | Prof. Kolin Paul, IIT Delhi

- Developed a novel encoding method, named Nucl2Vec, for Genome variant calling.
- Based on the Skip-Gram model, providing a distributed vector representation.
- About 3 times faster than the existing state of the art in NGS Read Alignment.
- Achieved 97% accuracy against the de facto standard BWA-MEM alignments.

MINOR PROJECTS

- **Finding Influential Communities in Large Scale Networks** [arxiv]
- **Abstractive Summarization of Spoken & Written Conversation** [arxiv] [demo]
- **Recommender Systems for Personalized Quizzes** [report]
- **Audio Tactile Reader for Visually Challenged** [code] [blog]