Nilaksh Agarwal

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EDUCATION

Columbia University   New York, NY
M.S. in Computer Science, GPA: 4.0   Exp Dec 2022
- Relevant Courses: Causal Inference, Foundations of Blockchains, Representation Learning, Unsupervised Learning, Databases, Cryptography, Advanced Algorithms
- Honors: Course Assistant for Computational Learning Theory, Computer Vision and Machine Learning

Indian Institute of Technology, Delhi   Delhi, India
M.Tech. in Computer Science, GPA: 8.74   Jul 2020
B.Tech. in Engineering Physics, GPA: 8.89   Jul 2020
- Relevant Courses: Advanced Data Structures, AI for Cognitive Robot Intelligence, Algorithmic Game Theory, Extreme Classification, Graph Neural Networks, Natural Language Processing, Online Algorithms, Operating Systems
- Honors: Semester Merit Award, Teaching Assistant for courses on ML and DBMS, Marketing Director - Cultural Fest

WORK EXPERIENCE

Microsoft   Seattle, WA
Software Engineer Intern   Jun 2022 - Aug 2022

WorldQuant Research   New Delhi, India
Data Scientist   Aug 2020 - Aug 2021
- Founded a 3-member team, aimed at developing complex datasets for algorithmic trading and contributed 20+ datasets
- Analyzed 3000+ companys' quarterly/annual conference call to predict future stock movement with sentiment analysis
- Developed k-means clustering toolkit to generate stock groupings, led to a 25% increase in alpha sharpe performance
- Produced 250+ trade signals applying algorithms on invented deep learning datasets, adding $20 Million value to firm

Quantitative Researcher - Summer Internship   May 2019 - Jul 2019
- Devised utility operators for intraday (5 minute) strategies to control behavior, reduce risk and regulate market impact
- Augmented strategies with technical indicators to maintain Sharpe and turnover, & minimize intra-strategy correlation
- Built 3 operators for multi-factor exposure-based trading strategies utilizing constrained conic optimization - MOSEK

TECHNICAL SKILLS

Languages: C, C++, C#, Python, Java, Go, Bash, Git, MATLAB, HTML5/CSS, JavaScript, SQL, NoSQL
Frameworks: Tensorflow, PyTorch, NLTK, Selenium, Flask, Django, Docker, Kubernetes, GCP, Azure, Unix/Linux

PROJECTS

Model Runtime Calculator for CNNs/DNNs (Python)   Sep 2021 - Dec 2021
- Model the Training Time & Cost on GCP based on parameters without no memory and disk considerations.
- Find correlations between various model parameters linking them to execution costing on GCP
- Extendable to multiple GPUs to create a larger database of the model parameterizations vs. training time
- Cost & Availability of GPUs is a big concern which can be resolved using a benchmarking calculator

3D Human Pose Estimation from RGB+Depth Images (Python)   Jan 2019 - Jan 2020
- Programmed a novel multi-modal Deep model for 3D pose Tracking (24 joints); outperformed SotA (1.3% better)
- Improved both natural (Human3.6M) & synthetic (SURREAL) data; employing Coordinate Conv. & Sequence Models
- Tracked 25 distinct Yoga poses on 75 subjects in 3D, with occlusions and unnatural extensions not possible with SotA

Xv6 extension & functionality (C)   Feb 2019 - Apr 2019
- Managed 3-member team, to extend Xv6 functionality, with IPCs (unicast multicast) & designing distributed algorithm
- Optimized Maekawa's and Jacobi's algorithm for mutual exclusion & steady heat distribution, up to 1000+ grids sizes
- Formulated Kubernetes containers with 75% efficiency process, memory and file system isolation; & virtual scheduler

Early Detection of Carcinoma in Liver (MATLAB)   Sep 2017 - May 2018
- Innovated algorithm for liver segmentation from MRIs employing layer-based region growing across stack (71%DC)
- Collaborated with Medical Imaging Lab, IITD to produce a 3-part toolbox for cancer detection, by MR image analysis
- Abstract: Nayak, A.; Agarwal, N.; Agarwal, S.; Krishan, S.; Mehndiratta, A.; "Automated Segmentation of Lesions in Liver using T1 MR Imaging"; ISMRM Workshop on Quantitative Body Imaging, 26-28 Mar. 2018, New Delhi, India