Ameya Anjarlekar

Urbana, IL

Personal Webpage | ameyasa2@illinois.edu | linkedin.com/in/ameyanjarlekar | Google Scholar | Github

Education

University of Illinois at Urbana-Champaign — **Research Advisor: R. Srikant & Rasoul Etesami**

PhD in Electrical and Computer Engineering; ***GPA: 3.96/4*** *(08/2022-present)*

Indian Institute of Technology, Bombay — **Mumbai, India**

Bachelor of Technology in Electrical Engineering (with a minor in Computer Science); ***CPI: 9.64/10*** *(08/2017-05/2021)*

Key Publications

- Generalized Fractional Ambiguity Function and Its Applications. Circuits Systems & Signal Processing, Springer
- Generalized Fractional Matched Filtering and its Applications, National Conference on Communications, 2020
- Striking a Balance: An Optimal Mechanism Design for Heterogenous Differentially Private Data Acquisition for Logistic Regression. (submitted to TMLR)
- A weighted generalized coherence approach for sensing matrix design(Preprint)

Industrial Experience

Quadeye Securities — **(06/2021 - 06/2022)**

Quantitative Researcher — *Gurgaon,India*

- Developed arbitrage-based strategies to formulate high-frequency trading algorithms in the derivatives segment
- Handled the responsibility of improvement and successful operations of trading strategies in 3 regions
- Leveraged naive Machine Learning-based analysis and statistical techniques to improve existing strategies leading to a 20% increase in Fill ratio and elevating the Sharpe ratio from 3 to 4

Daikin Industries — **(06/2020 - 07/2020)**

Machine Learning Research Scientist Intern — *Osaka, Japan*

- Accomplished 70% video data compression by developing a Hitomi Camera-inspired image processing algorithm
- Highlighted around 60% cost-saving after using the compression algorithm by performing economic analysis

Research and Technical Experience

Mechanism Design for Heterogeneous Differentially Private Data Acquisition — **(08/2022-present)**

- Introduced a mechanism design approach using ideas from game theory to design a data market which is used to model the utility-privacy tradeoff in differentially private training of machine learning models.
- Formulated and optimized an objective that effectively balances the improvement of classification accuracy in the machine learning model with the reduction of payments made to the data providers
- Developed an asymptotically optimal algorithm for the online version of the problem wherein the data providers approach the platform sequentially and demand instantaneous payments

IIT Bombay Mars Rover Team — **(08/2018 - 12/2019)**

- Formulated an object detection AI framework using Python essential for the autonomous operations of the Mars rover robot by developing a computer vision algorithm using transfer learning resulting in 93% accuracy
- Collaborated with other sub-teams to seamlessly integrate our deep learning model with the robotic interface

Other Projects

- **VAE-GANs for Compressive Medical Image Recovery:** Executed the implementation of a generative AI model with PyTorch to achieve probabilistic compressive image recovery for undersampled biomedical images.
- **Comparative Performance Analysis of Parallel Algorithms:** Implemented image compression using PCA, DCT, and FFT and studied their computational speedup using OpenMP, MPI, and CUDA.

Technical Skills and Interests

Skills: Statistical Learning, Data Structures, Data Science, Artificial Intelligence, Pattern Recognition, Statistics
Tools: Python, C, C++, ROS, PyTorch, Pandas, Tensorflow, Bash, Git, Matlab, R, Keras, Shell, VHDL, Scikit
Research Interests: Differential Privacy, Game Theory, Deep Learning, Machine Learning, Computer Vision

Awards and Achievements

- Awarded **Undergraduate Research Award** (URA-01) by IIT Bombay for innovative research contribution
- Presented with **Institute Technical Special Mention** for contributing to the technical sphere of IIT Bombay
- Received **IRCC award** from IIT Bombay for noteworthy research contributions in Radar Signal Processing
- Achieved 4^{th} position in an invited Datathon organized by **Schonfeld Capital**