


Nimit Kapadia

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EDUCATION

- **University of Illinois Urbana-Champaign** Aug '22 - May '24
Master of Science in Operations Research Engg. (**Specialisation:** Finance & Advanced Analytics) **GPA: 4.0/4.0**
Relevant Courses: Stochastic Calculus, Algorithmic Trading, Numerical Methods in Finance, Statistics in Finance, Deep Learning, Machine Learning in Finance, Natural Language Processing, Computational Mathematics, Database Systems
- **Indian Institute of Technology Bombay (IIT Bombay)** Jul '15 - Jun '20
(B.Tech. + M.Tech.) in Electrical Engineering (**Minor:** Computer Science) **GPA: 8.75/10.0**
Relevant Courses: Image Processing, Computer Vision, Regression Analysis, Statistical Inference, Game Theory

PROFESSIONAL EXPERIENCE

- **Quantitative Research Intern** (May '23 - Sep '23)
JP Morgan & Chase New York, USA
 - Improved **American Option** pricing using **Monte Carlo** simulation and **regression analysis** by implementing efficient batch processing resulting in **25%** reduction in computational time and a substantial **20%** decrease in storage space usage.
 - Implemented **ARIMA**, **GARCH**, and **neural networks** for financial time series modeling, attaining **90%** accuracy in market trend analysis and forecasting. Strengthened investment strategies and risk management decisions.
- **Financial Data Analyst** (Jan '23 - Sep '23)
REX Mundi Consulting LLC Champaign, USA
 - Utilized data analysis techniques & **PowerBI** visualization tools to conduct analysis of options strategies (BXM/PUT vs SPX) based on Sharpe & Information ratio & MoM/YoY returns providing market advice to financial sector companies.
- **Artificial Intelligence Researcher** (Jan '21 - Aug '22)
Hitachi Ltd. Tokyo, Japan
 - Developed a real-time **PetriNet** model leveraging **MITRE ATT&CK** data, achieving **95.4%** accuracy in detecting **Failures and Cyber-attacks in ICS**, surpassing state-of-the-art methods and preventing substantial financial losses.
 - Created **language-agnostic LLM** solution to identify **disinformation** and **misinformation** on social media, resulting in a **3%** increase in speed and an **88%** accuracy rate, while effectively addressing language diversity for global application.
 - Conducted research on **AI optimization** and utilized Hitachi's LUMADA IoT Platform, optimizing agriculture practices with **90%** water and energy usage improvement, providing data-driven crop solutions to meet market demand.
- **Quantitative Derivatives Analyst** (Jun '20 - Dec '20)
Topright Labs LLC New Orleans, USA
 - Reduced Option pricing error by **10%** using a volatility model based on the **Black Scholes Merton (BSM)** model.
 - Improved risk-return trade-off securities in portfolio by **5%** using **Efficient Frontier** based on **mean-variance** analysis.
 - Improved trading performance by **7%** using **Fibonacci retracement** model to identify stock support-resistance levels.

PROJECTS AND RESEARCH WORK

- **Natural Language Processing for Patient Avatars in Nursing Simulator** (Apr '23 - Dec '23)
Jump ARCHES - OSF HealthCare Champaign, USA
 - Developed a proof-of-concept simulation platform for ICU workspaces incorporating **robotic digital twins** and **VR immersive simulation** utilizing ROS and Unity & achieved emotional inflections in avatars using **LLMs (GPT-4/J)**.
- **Quantitative Research** *Financial Engineering & Gies Business School, UIUC* (Aug '23 - Dec '23)
 - Improved **American Option pricing** by **4%** with **Monte Carlo simulations**, regression analysis, and valuation methods and compared with results from **Binomial** and **Trinomial Tree** models.
 - Increased accuracy of **credit card default risk** prediction for individuals and SMEs by **7%**. Employed meticulous data cleansing, pre-processing techniques, and advanced machine learning regression models.
 - Formulated stock **correlation network** of SPX data to identify dominant sector using **max clique** and **MST** algorithms.
- **Video-based Action Recognition** *Masters' Thesis, IIT Bombay* (May '19 - Jun '20)
 - Refined & implemented **Adversarial Domain Adaptation (DANN)** of unsupervised covariate shifted data.
 - Obtained accuracy index of **96.6%** on human action recognition videos (**UCF101 & Olympics Sports**) with initial features generated using **3D CNN** that captures both optical flow and frame-level brightness.
- **Threat modeling in Medical Cyber-Physical Systems** (Aug '22 - Dec '22)
 - Researched diverse trust and threat models in Medical Cyber-Physical Systems, addressing vulnerabilities in brain implants with a remarkable **97%** success rate and authored & submitted a comprehensive paper to **ACM-Journal 2023**.
- **4D Analysis of Early Flower Development** *ENS de Lyon, France* (May '20 - Jul '20)
 - Conducted **image reconstruction, segmentation & data-visualization** to demonstrate cellular growth in flower bud tissues. Validated automated algorithm (**Block-matching**) for image reconstruction and achieved **99.6%** accuracy in an Automatic Cell-lineage & Feature tracking system, surpassing manual tracking methods.

- **Interests** - Quantitative Research, Deep Learning, Natural Language Processing, Computer Vision, Data Science
- **Skills** - Python, R, SQL, TensorFlow, PyTorch, ROS, pandas, NumPy, C/C++, Git, MATLAB, Bash, Unity, Kubernetes
- Awarded **Charpak Scholarship** (**1 of 14** recipients all over India) for research at **ENS Lyon, France**. ('20)
- Awarded **A+** for exemplary performance in Machine Learning, Statistics, Differential equations and Economics. ('22)
- **Teaching Assistant:** Biomedical Imaging, Machine Learning, Deep Learning, Differential Equations, Signal Processing.