Ankit Singh

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Summary

PhD in Physics with 4+ years of postdoctoral research applying advanced statistical modeling, simulations, and data analytics to large-scale datasets. Strong Python and SQL developer with hands-on experience in time series forecasting, clustering, classification, and portfolio analytics. Completed two applied AI and data science programs from WorldQuant University, covering projects in computer vision, A/B testing, and financial modeling. Actively seeking data science roles to apply my analytical skills to real-world problems. Full UK work rights.

Skills

Modeling:	Linear/Logistic Regression, Decision Trees, Random Forests, ARIMA, GARCH, CNNs, YOLOv8, GANs, K-Means, PCA
Deployment:	Streamlit, Flask, GitHub, Dash, ETL Pipelines
Visualization:	Matplotlib, Seaborn, Plotly, Dashboards
Programming:	Python (NumPy, Pandas, Scikit-learn, PyTorch), SQL, MPI, OpenMP
Tools & Platforms:	Git, Jupyter, Linux, MongoDB, LaTeX
Domain Knowledge:	Financial Markets, Forecasting, Risk Modeling, Computer Vision

Experience

Quantitative Finance Projects

- **Option Pricing Models:** Implemented Binomial Tree, Black-Scholes, and Monte Carlo simulations for derivatives pricing. GitHub
- **Backtesting Framework:** Developed an OOP-based simulation for stock trading strategies. Incorporated volatility-adjusted signals using GARCH. GitHub
- **Portfolio Optimization:** Applied Modern Portfolio Theory, Monte Carlo simulations, and convex optimization to model efficient frontiers. GitHub
- **Risk Management Toolkit:** Created technical indicator functions, Sharpe/Alpha/Beta calculators, and VaR estimators with signal denoising filters. GitHub
- **Time Series Forecasting:** Modeled equity prices using ARIMA and GARCH, with rolling window predictions and diagnostic dashboards. GitHub
- **Mutual Fund Analyzer:** Built a Streamlit app integrating public APIs to assess diversification, Sharpe ratio, and sector exposure. App GitHub

Research Fellow **November 2020 – November 2024**
Korea Institute for Advanced Study (KIAS) *Seoul, Republic of Korea*

- Led data-centric research using statistical models on large-scale astrophysical data. Designed Python pipelines for cleaning, merging, and feature extraction, significantly reducing analysis time by 80% resulting in four peer-reviewed publications.
- Designed a feature extraction and postprocessing pipeline, creating a novel dataset that reduced processing time by 30%. Published 5 peer-reviewed papers based on this work.

Ph.D. Research **Aug 2014 – Aug 2020**
Indian Institute for Science Education and Research (IISER) *Mohali, India*

- Used SQL and clustering algorithms for astrophysical data analysis, resulting in two peer-reviewed publications.
- Developed a novel mock data generation technique, improving statistical significance tenfold. Published 4 peer-reviewed papers during PhD.

Education

Ph.D. in Physics **Aug 2014 – Aug 2020**
Indian Institute for Science Education and Research (IISER) Mohali *Mohali, India*

M.Sc. in Physics **Aug 2012 – May 2014**
Department of Physics and Astrophysics, University of Delhi *New Delhi, India*

Certifications

WorldQuant University (Remote) **July 2025**
Applied AI Lab – Deep Learning for Computer Vision

- Completed six end-to-end projects in image classification, object detection (YOLOv8), GAN-based image generation, and facial recognition.
- Technologies: PyTorch, OpenCV, HuggingFace Transformers & Diffusers, Flask, Streamlit, Stable Diffusion.
- Built and deployed web apps for wildlife detection, crop disease classification, traffic monitoring, celebrity face recognition, medical image generation, and meme creation.

WorldQuant University (Remote) **July 2025**
Applied Data Science Program

- Completed eight projects spanning regression, classification, clustering, time series forecasting, A/B testing, and volatility modeling.
- Technologies: Python, Pandas, Scikit-learn, SQL, MongoDB, Plotly Dash, GARCH, ARIMA, SQLite, Linux.
- Built predictive models (Linear, Logistic, Decision Tree, Random Forest, Gradient Boosting, GARCH, K-Means) and deployed dashboards for data-driven insights.
- Designed ETL pipelines, implemented API calls, conducted chi-square hypothesis tests, and deployed interactive applications.

Achievements

- 9 peer-reviewed publications (4 during PhD, 5 during postdoc) with 100+ citations.
- Awarded Certificate of Merit (Top 1% nationwide) in Indian Science Examination, 2007.
- Received 5 competitive international travel and research grants.

Leadership & Involvement

- Team Lead: Maintained research group website for 4 years. Coordinated collaboration meetings across time zones.
- Organised 4 international conferences. Taught and assisted in 7 university courses.
- Led 5 public outreach events promoting science and astronomy.