Diganta Bhattacharya

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Education

Indian Statistical Institute (ISI), Kolkata, India
Master of Statistics (Major: Probability, Minor: Finance) | *80.2%* — *2020 – 2022*
Bachelor of Statistics (Honours) | *74.5%* — *2017 – 2020*

Olympiads & Quantitative Achievements

- **Simon Marais Mathematics Competition: Asia Rank 27** (Pairs), 2019; Top Quartile Asia, 2018.
- **National Olympiads (India):** Regional Mathematics Olympiad **(RMO)**, 2014, 2015, 2016.
- **Competitive Ranks:** B.Stat (ISI) Merit List Rank 10 (2017); KVPY SA Scholar (2016); NEST Junior AIR 67; NEST Senior AIR 240.
- **Certifications:** Financial Risk Management (GARP) Part I Cleared, 2025.

Technical Stack

- **Languages & Databases:** Q/kdb+, C++, Python, SQL, R.
- **Quantitative & ML:** Deep Learning, PyTorch, TensorFlow, XGBoost, Transformers, LLMs.
- **Architecture & MLOps:** AWS (S3, EC2, Lambda), Docker, Kubernetes, GitHub Actions, Plotly Dash, React.

Professional Experience

JPMorgan Chase & Co. — *Mumbai, India*
Quant Research, Securities Services — *Dec 2025 – Present*

- **P&L Attribution Engine:** Led development of an explainable P&L attribution model for the trading desk; implemented Taylor expansion with cross-gamma decomposition and residual minimisation to accurately explain daily desk performance and surface key risk drivers.
- **Stress & Regulatory Capital Modelling:** Primary owner of the firm's Stress Forecasting platform; partnered with desk heads and quant teams to drive CCAR/DFAST capital planning across regulatory scenarios, directly supporting regulatory submissions.
- **Codebase Knowledge Graph:** Built and deployed a graph-based semantic search tool over internal quantitative codebases, enabling natural-language querying of model dependencies, function call chains, and risk factor lineage; reduced onboarding time for new quants and accelerated root-cause analysis during model audits.
- **RL-Based Hedge Optimiser (IR Products):** Developed a reinforcement learning agent (PPO) to dynamically optimise hedging strategies for interest rate products; trained against simulated yield curve scenarios with transaction cost penalties, outperforming static delta-hedge benchmarks on risk-adjusted P&L.

Morgan Stanley — *Mumbai, India*
Fixed Income Division — *May 2022 – Nov 2025*

Senior Associate, FXEM Desk

- **P&L & EV Modelling (Q/kdb+):** Designed and owned microsecond-precision P&L and Expected Value models for spot and forward FX markets; worked directly with front-office traders to continuously refine execution strategies and improve fill quality.
- **Backtesting Pipeline & Model Lifecycle:** Owned end-to-end model lifecycle from mathematical design to live production; engineered Q/kdb+ tick stream pipelines enabling ultra-low-latency automated backtesting of quantitative trading strategies.

Senior Associate, SPG Modelling Desk

- **High-Frequency Property Index:** Designed and optimised a Case-Shiller style property index model over a 25M+ property database; re-engineered the core computation pipeline to cut runtimes from 6+ hours to $\sim$50 minutes, enabling near-real-time index updates for front-office pricing.
- **Hedge Optimisation Engine:** Built a hedge optimisation engine from scratch, integrating external INTEX tick data with internal loan portfolios in kdb+/q; empowered desk quants to run rapid scenario analysis and dynamically rebalance risk exposures across the structured products book.

Summer Associate, SPG Modelling Desk

- **Hedonic & Geo-Spatial Pricing Models:** Pitched and developed property pricing models using custom distance metrics and ANNs; established an R–kdb+ framework for rapid deployment.

Projects & Research

- **Market Microstructure (Kaggle):** Built predictive models for Jane Street Real-Time Market Data Forecasting and Optiver Realized Volatility Prediction competitions.
- **Cryptography Research (Microsoft India):** Authored an $O(n^2)$ algorithm for the Hidden-Subgroup problem; developed a Zero-Knowledge Authentication prototype.