

Dhrubojeet Haldar

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Summary

Financial Mathematics graduate student focused on systematic long/short equity strategies, equity futures microstructure research and inventory-aware market-making (C++20). Background in quantitative model validation with emphasis on regime-conditional signal diagnostics.

Education

North Carolina State University	Raleigh, NC
Master of Financial Mathematics	12/2026
GPA: 3.82 /4.0	
Indian Institute of Technology, Roorkee	Roorkee, India
Bachelor of Technology in Computer Science	07/2023

Related Coursework

Stochastic Calculus for Finance | Options and Derivatives Pricing | Monte Carlo Methods for Finance
Probability and Stochastics for Finance | Linear Models and Regression | Statistical Inference
Data Structures | Statistical Learning

Skills

Programming: Python, C++20, SAS, SQL, R
Packages: Pandas, SciPy, NumPy, Scikit-learn, Statsmodels, NLOpt, VolLib, QuantLib, XGBoost
Quantitative Methods: Time Series Analysis, Monte Carlo Simulation, Numerical Optimization
Markets and Data: Bloomberg Terminal, yfinance, Databento (MBP-10), QuantConnect

Experience

Quantitative Model Solutions Specialist Wells Fargo	Bangalore, India 06/2023 – 07/2025
- Diagnosed regime-conditional signal decay in Cards (\$48B) credit models using KS and PSI drift metrics. - Identified feature-level drift predicting scoring model instability ahead of formal model review cycles. - Quantified model sensitivity to macro and behavioral regime shifts across multi-million-record datasets.	

Project Experience

Avellaneda-Stoikov Market-Making - BTCUSD Perpetual Futures (Link)	06/2026 – Present
North Carolina State University, Financial Mathematics Department	
- Built AS market-maker (C++20) on BTCUSD perpetual; MLE-calibrated fill intensity; 185 walk-forward windows. - Real-tape fill replay (not Poisson); 50ms order latency and glitch filter; hard inventory bounds (± 5 lots). Vol-adaptive horizon and inverted-quote fix tightened half-spread from \$54 to \$3-9, driving fills from 480 to 46k and PnL from -\$256.94 to +\$38.04. - Net PnL +\$38.04 (46k fills), Sharpe 1.84, 69.7% profitable windows; lower bound (maker rebates unmodelled).	
Russell 2000 Deep Momentum - XGBoost 4-Quadrant Long/Short Reclassifier (Link)	05/2026 – 06/2026
North Carolina State University, Financial Mathematics Department	
- Bimodality-motivated 4-quadrant XGBoost reclassifier: 12-1 momentum (Russell 2000, \$10M, monthly rebalance), 10-member ensemble, 36-month rolling window, 19 cross-sectionally ranked features. - Walk-forward (159 rebalances, 2012-2025): v2 hybrid Sharpe 0.143 vs 0.046 baseline; max. drawdown -5.5pp; Sharpe/drawdown ratio 0.72 vs 0.18. - Primary alpha: GL quadrant (bottom-decile reversal, +1.67%/mo) – orthogonal to momentum factor. - Diagnosed post-2020 L/S compression (+0.76% to +0.24%/mo): GL reversal leg decayed (+2.29% vs +0.38%/mo); regime gate suppressed GL in 54% post-2020 months vs 28% pre-2020 (GW return held +1.52% vs +1.22%).	
ES Futures Calendar Spread Mean-Reversion (Link)	03/2026 – 05/2026
North Carolina State University, Financial Mathematics Department	
- ES calendar spread mean-reversion via Fair Value deviation (SOFR + div yield + expiry differential); Databento MBP-10 nanosecond data, 4 quarterly roll windows (Sep 24-Jun 25). - High-conviction entry at $z_{\text{fill}} > 3$ (bias-corrected); avg net +\$2.86/lot net of costs. - European session is a significant alpha source ($n=90$, $p = 0.013$, avg +\$3.9/trade) across all OOS windows. - OOS results: $p = 0.006$ ($n=299$), annualized Sharpe +3.88 (CI [+1.38, +6.63]), net of \$8.04/lot (exchange, NFA and broker fees); drift-4h gate improved per-trade Sharpe 0.159 vs 0.058 ungated.	
IMC Trading Prosperity 4 - Algorithmic Trading Competition (Link)	03/2026
Competed solo; ranked 42nd globally in Phase 1 (~18k teams); final rank ~900 (top 5%) across all participants.	