Kinshu Gupta

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Payments engineering lead at Trivelta, with a background in high-throughput financial systems, a self-built 24/7 prediction-markets and crypto market-data platform, and research in explainable machine learning

Professional Experience

Trivelta Boston, MA
Lead Software Engineer *May 2026 – Present*

- Lead a team of **5** engineers building one payments orchestration layer from product spec to production: cards, bank transfers (SPEI), ACH, and mobile money across **12** processors in North America, Latin America, and Africa
- Own tax reconciliation: built the pipeline as a polars DAG over ClickHouse feeding the monthly close; surfaced **$5.7M**/year of over-reversal from a queue race applying **546K** reversals 2–3x
- Built payments observability: the reference logging and deposit-metrics packages, with Coralogix dashboards, that every new processor integration inherits
- Led the Bitso bank-transfer (SPEI) launch for a new Mexican tenant, shipping in **4** weeks against a hard launch deadline: **9.6K** deposits credited to **3.2K** users in its first weeks
- Run payments incident response; led response to a **multimillion-dollar** payout theft, contained within the hour and sized by reconciling payouts to processor logs

DraftKings Boston, MA
Software Engineer, Payment Systems *Jun 2025 – Mar 2026*

- Developed the payments routing engine processing **$174M** Super Bowl volume (**13,500+** deposits/min): processor selection on real-time risk scores, payment tiers, and jurisdiction, with shadow mode and fail-open
- Saved **$10M+** annually by developing a tiered ACH routing ML algorithm segmenting users by risk profile to optimize guaranteed vs. non-guaranteed processor selection, shifting **75% of volume to lower-cost** rails
- Built a **prediction-markets** aggregator using SBERT embeddings to match semantically equivalent contracts across **Kalshi** and **Polymarket**, surfacing cross-venue arbitrage and market-making opportunities
- Built risk-score ingestion: Snowflake batch backfills plus a real-time RabbitMQ stream making fraud/AML scores routable in seconds; Airflow validation jobs caught a transaction rate-limit bug before customer reports

DraftKings Boston, MA
Software Engineer Intern, Financial Platform *Jun 2024 – Aug 2024*

- Eliminated Kafka transaction consumer memory leak by implementing skip-and-advance mechanism with dead letter queue integration, resulting in **26% reduction** in Kubernetes compute costs from optimized pod autoscaling
- Cut incident impact assessment from **3+ min to 2 sec** by building a cached lookup in the ServiceStack reporting microservice that replaced slow ad hoc Snowflake queries

International Game Technology (IGT) Providence, RI
Gaming Architecture / Machine Learning Engineer Intern *Jun 2023 – Aug 2023*

- Projected **23% increase** in casino slot machine player retention by building generative Markov chain simulation of player behavior telemetry, used to optimize a real-time personalized bonus rewards policy proof-of-concept
- Designed a microservices pipeline from simulated gaming machines to a Drools rule engine, handling **50K+** concurrent session streams at **10K+** events/minute

Research Experience

Longitudinal Cohort Psychology Lab, Quinnipiac University — Hamden, CT
Research Assistant — *Sep 2022 – May 2024*

- Findings **shaped data-driven institutional policies** to prioritize support resources toward highest-impact at-risk student cohorts
- Integrated multi-decade longitudinal data from **25,000+** students using PyTorch and HuggingFace Transformers to build predictive models analyzing psychoeducational variables on academic outcomes

Explainable Prostate MRI Cancer Classification Neural Network — Hamden, CT
Thesis research, advised by Profs. James Soda and Mehmet Gulum — *Aug 2023 – May 2024*

- Developed input gradient visualization techniques for fine-tuned VGG-16 Convolutional Neural Network, comparing efficacy with prior **XAI methods** for computer vision including perturbation, class activation & saliency maps

Publications and Presentations

What, Then, Is Critical Thinking? Insights from a Longitudinal Study of Critical Thinking
Michael Ben-Avie, Brian Darrow, Luke Brown, **Kinshu Gupta**, J. T. Torres
Journal of Assessment and Institutional Effectiveness, 15(1–2), 19–66, 2025 · paper

Explaining Pretrained Deep Neural Network MRI Cancer Classification Outcomes
Kinshu Gupta; advised by James Soda and Mehmet Gulum. Selected from 800+ applicants
Poster, American Society for Engineering Education (ASEE) Northeast Conference, 2024 · poster

Longitudinal Analysis of Psychoeducational Factors in Student Math Achievement
Brian Darrow, Jr., Luke Brown, **Kinshu Gupta**
Talk, Mathematical Association of America (MAA), Northeastern Section Fall Conference, Boston, 2023 · slides

Projects

Wallfacer: Multi-Venue Market-Data & Trading Platform, Personal project

- Ran **profitable latency arbitrage** on macroeconomic data releases, on a cross-venue arbitrage engine built with settlement-equivalence checks, net-of-fees edge, and on-chain USDC execution
- Built a 24/7 market-data platform across Kalshi, Polymarket, and Hyperliquid: sharded asyncio WebSocket capture over **16K+** assets, sequence-gap detection, off-loop durable writers to S3 under a lossless completeness contract

IMC Prosperity 2025 Trading Challenge, **11th** in US, **37th** worldwide out of **12,680+** teams

- Developed pairs trading, market-making, Black-Scholes, and mean reversion algorithms on order book flow
- Uncovered cross-asset/market and ETF arbitrage through EDA using regression-based time-series models

Education

Quinnipiac University — Hamden, CT
Master's in Computer Science (Security Systems), GPA 3.98 — May 2025
Bachelor's in Computer Science, Bachelor's in Data Science, *summa cum laude*, GPA 3.98 — May 2024
Trustee Award ($104K Scholarship); President, Computing Club (100+ members, first sponsors)

Skills

Languages	Python (asyncio, FastAPI, polars, pandas), C# (.NET, ServiceStack), Java, SQL
Machine learning	PyTorch, HuggingFace Transformers, SBERT, LLM agents and tooling (MCP)
Infrastructure	AWS (Lambda, EKS, SQS, EventBridge, DynamoDB), Docker, Kubernetes, Terraform
Data	Kafka, RabbitMQ, Airflow, ClickHouse, Snowflake, OpenTelemetry