Andrei Piterbarg

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EDUCATION

University of Pennsylvania, School of Engineering & Applied Science – Philadelphia, PA   **August 2024- May 2028**
Candidate for Bachelor of Science of Engineering, **Rachleff Scholar**   **GPA: 3.98/4.00**
Major: Computer Science | Minor: Mathematics
Activities: Penn Spark Lead Developer, Penn Squash Club Member, Penn Golf Club Member, CIS 1210 (*Data Structures and Algorithms*) Teaching Assistant responsible for leading weekly recitations, office hours and grading

Westminster School – London, UK
A-Levels: Mathematics (A*), Further Mathematics (A), Physics (A*), Art (A*), GCSES: 11 grade 9's (A** equivalent)

EXPERIENCE

ML Undergraduate Researcher | GRASP Lab, University of Pennsylvania, Philadelphia   **October 2025 – Present**
- Building adversarial agent systems extending Collina, Globus-Harris, Goel et al. (2025) with Professor Surbhi Goel.
- Designing experiments on multi-agent information aggregation, evaluating convergence and regret across synthetic and structured prediction tasks

Mathematical Researcher | University of Pennsylvania, Philadelphia   **January 2026 – Present**
- Collaborating with Prof. Damek Davis and Prof. Terence Tao on open problems in harmonic analysis and optimization, contributing to a public research initiative on unsolved constants https://github.com/teorth/optimizationproblems
- Developed a Numba-JIT and MOSEK framework for bounding autoconvolution constant, combining Lasserre SDP hierarchy relaxations with simplex cuts and convolution multiplier constraints for lower bounds. Also explored LogSumExp continuation with Nesterov acceleration and Polyak subgradient polishing for upper bounds.

CompatibL | Machine Learning Research Intern | Remote   **November 2025 –Present**
- Applied representation learning methods and autoencoders to model global yield and volatility surfaces
- Designed low-dimensional latent manifolds capturing term-structure dynamics across markets and currencies
- Comparing learned representations against traditional methods including PCA, focusing on reconstruction error and temporal stability

Elm Wealth | Machine Learning Research Intern | Philadelphia, Pennsylvania   **May 2025 – August 2025**
- Developed a Graph-RAG chatbot assistant to help with customer onboarding. Explored hallucination mitigation and optimal indexing techniques, added HITL capabilities and automated data ingestion through a mail bot
- Implemented retrieval pipelines and evaluation harnesses, and improved performance via prompt and index tuning. Hardened data handling for sensitive information

PROJECTS

Real-Time Recommendation System   **May 2025- November 2025**
- Built a real-time recommendation system ingesting live user interaction events (clicks, impressions, dwell time) to dynamically rank social media content
- Designed data pipelines with Kafka to generate near real time features and trained ranking models
- Deployed inference service with FastAPI and Redis-backed caching, enabling fast ranking requests at scale

ML Sports Betting System   **August 2024– November 2024**
- Built historical soccer results and bookmaker-odds database via web scraping across 50+ leagues
- Trained models to estimate fair win/draw/loss and BTTS probabilities and create implied odds
- Implemented and backtested different value-betting filters and risk-management strategies (eg. Kelly criterion and volatility-based position sizing). Achieved ~5% annualized returns over 1000+ bets

Awards and Achievements

- Penn x Anthropic Hackathon Nov. 2025: 1st place in the Quantitative Analytics branch and 3rd place overall
- UK National Cipher Challenge Individual Winner, Gold Award in UK Senior Math Olympiads(2x) and Senior Physics Challenge, competed in UK Math & Physics Olympiads.

SKILLS & INTERESTS

Languages & Frameworks: Python, Java, React, Node, SQL
Tools: PyTorch, scikit-learn, JAX, NumPy
Systems: Kafka, FastAPI, Redis, Docker, AWS
Languages: Fluent in English, Spanish and Russian and proficient in French