Abdulla Toleugazin

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PROFESSIONAL SUMMARY

PhD candidate in Applied Mathematics at the University of Central Florida, researching network science, graph theory, and statistics under Professor Marianna Pensky. Core expertise spans spectral methods, statistical theory, and machine learning evaluation, with hands-on experience building Python/MATLAB pipelines to validate models against real-world and simulated data. Targeting quantitative research roles in finance/trading and PhD-level research roles in AI/ML, statistics, and optimization.

CORE COMPETENCIES

Spectral Methods & Statistical Theory | Machine Learning Evaluation | Options Pricing (Black-Scholes) | Tree-Based Methods | Large-Dataset Analysis | Python (pandas, NumPy, scikit-learn) | Network Science & Graph Theory | Technical Communication

WORK EXPERIENCE

University of Central Florida

Aug 2022 - Present

Graduate Research Assistant

- Conducting PhD research with Professor Marianna Pensky on clustering and classification in multilayer networks.
- Developed a two-stage method that clusters informative network layers, estimates their shared latent subspaces, and classifies weaker layers, combining spectral methods with statistical theory.
- Validated the method with MATLAB simulations and MovieLens experiments; in a 160-layer MovieLens stress test, achieved an adjusted Rand index of 0.371 vs. 0.178 for the next-best tested baseline and 0.062 for all-layer spectral clustering.
- In simulations with a few wide, informative layers and many narrow layers, reduced clustering/classification error by roughly 3-5x versus all-layer refinement.
- Established non-asymptotic theoretical guarantees for exact layer clustering and consistent subspace estimation under stated assumptions.

Handshake MOVE

Apr 2025 - Apr 2026

ML Evaluation Intern

- Used Python, pandas, NumPy, and scikit-learn to organize and validate evaluation data for 500+ advanced mathematical reasoning tasks at IMO/HMMT level.
- Reviewed LLM-generated solutions, documented recurring logical errors and annotation gaps, and designed adversarial test cases to refine evaluation criteria.

Black Mile Strategy

Jun 2026 - Sep 2026

Data/Identity Analyst Intern

- Supported JCPenney's customer-data modernization effort by mapping customer identities and tracing transaction flows across legacy MDM, CDB, CDM, and mainframe systems to support a cloud migration.
- Translated SAS logic for ZIP-code-based location assignment into Python.
- Produced data-flow documentation and identity-mapping rules used to guide the migration.

University of Central Florida

Aug 2022 - Present

Mathematics Instructor / TA

- Instructor/TA for Intermediate Algebra, College Algebra, Precalculus, and Trigonometry.
- Led three Calculus I recitations totaling approximately 150 students; taught Calculus II and ODE sections of approximately 50 students.
- Supported larger course offerings with 300-1,500 total enrollment across lectures, office hours, quizzes, exams, and grading.

PROJECTS

NBA Matchup-Metrics Validation
Paper in preparation - MIT Sloan Sports Analytics Conference

Built a Python pipeline using pandas and NumPy to validate matchup metrics across eight NBA seasons. Among 8,560 selected turnovers, found that matchup defender assignments agreed with play-by-play credited contributors in only 30.9% of cases, highlighting attribution limitations in current matchup metrics.

Python, pandas, NumPy

Bluesky Starter-Pack Network Analysis
Hackathon project

Used Python, sparse matrices, spectral clustering, and Louvain community detection to analyze a starter-pack network reaching 1.8 million accounts and 10.6 million memberships. Compared account-level and pack-level community structure.

Python, sparse matrices, spectral clustering, Louvain community detection

Healthcare Graph Data Layer
Python/MongoDB

Built a Python/PyMongo graph layer over healthcare quality-management sample data, loading 43 entities. Implemented reference validation, multi-hop queries, similarity edges, and connected-component clustering.

Python, PyMongo

EDUCATION

Ph.D., Applied Mathematics University of Central Florida — Aug 2022 - Aug 2027 (expected)

Advisor: Professor Marianna Pensky. Research: network science, graph theory, and statistics.

M.S., Applied Mathematics University of Central Florida — Aug 2022 - Aug 2024

B.S., Applied Mathematics and Physics Moscow Institute of Physics and Technology (MIPT), Moscow, Russia — Sep 2018 - Jun 2022

SKILLS

Languages/Libraries: Python (pandas, NumPy, scikit-learn, PyMongo), MATLAB, R, SQL, LaTeX

Methods: Spectral methods, statistical theory, clustering/classification, network science, graph theory, machine learning evaluation, tree-based methods (random forests, gradient boosting)

Domain Knowledge: Options pricing theory (Black-Scholes model); self-directed personal options trading experience

Tools: Git, Jupyter, Matplotlib, Excel **Computing:** CPU and GPU experiments on UCF's ARCC cluster