Adil Oryspayev

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Education

Syracuse University Expected May 2028
BS Computer Science & BS Mathematics (GPA: 3.96) *Syracuse, NY*

Experience

Software Engineer Intern Apr 2025 – Present
Syracuse University Open Source Program Office (OSPO) *Syracuse, NY*

- Engineered a high-frequency ingestion pipeline utilizing **Qdrant** vector storage and **transformer models** to enable semantic search and summarization across large-scale academic corpora
- Optimized system performance by implementing stream-based PDF parsing with **GROBID**, reducing memory usage during the tokenization and metadata extraction of heavy datasets
- Deployed production infrastructure on **Linux VMs** using **Docker**, configuring automated **CI/CD** workflows and network security protocols to ensure reliable nightly batch processing

Measure Theory Researcher Jun 2024 – Present
Polymath Jr *Remote*

- Co-authored a research manuscript on **Geometric Measure Theory** currently under review at the *Rose-Hulman Undergraduate Mathematics Journal*; presented findings at the **2025 Joint Mathematics Meetings**
- Formulated a computational criterion for rectifiability by discretizing continuous pointwise cone conditions into **dyadic square structures**, converting uncountable verification sets into finite algorithmic checks
- Derived a quantitative "square-based doubling inequality" to propagate density bounds across scales, establishing rigorous convergence rates for detecting **Lipschitz graph** structures

IT Manager & Technical Lead Jan 2025 – Present
The Daily Orange *Syracuse, NY*

- Directed engineering operations for a high-traffic news platform, ensuring site reliability and security against cyberattacks for over 25,000 monthly active users
- Managed production infrastructure (**UptimeRobot**, **Cloudflare**) and architected revenue-critical backend modules, handling traffic spikes while increasing ad revenue by 15%

Combinatorics and Graph Theory Researcher Jun 2024 – Present
Fairfield University *Fairfield, CT*

- Co-authored a research paper analyzing **Anti-van der Waerden numbers** on complex graph topologies, addressing variations of the **NP-Hard** 3-coloring problem
- Developed **Java** backtracking algorithms to enumerate coloring states, deriving rigorous bounds that reduced verification search space from **exponential to linear complexity**

Sequence Analysis Researcher Jun 2021 – Aug 2021
Polymath Jr *Remote*

- Implemented advanced metric data structures, including **Suffix Arrays** and **BK-Trees**, to optimize query complexity for fuzzy string matching; verified conjectures via **Python** scripts (**arXiv:2210.00508**)

Projects

Bi-level Optimization Visualization Platform | *Python, Docker, FastAPI, LLMs* Oct 2025 – Present

- Engineered a full-stack platform for **bilevel optimization**, implementing the **SACE framework** to solve hierarchical problems via **Streamlit** and **FastAPI**; deployed to **Linux VMs** with HTTPS/SSL
- Integrated **LLM-driven** modules to generate formulations and extract graph-based structures, reducing manual overhead in characterizing new problem templates

CanSat Competition Aerospace Prototype | *C++, MATLAB, Embedded Systems* Nov 2024 – July 2025

- Engineered **real-time embedded C++ firmware** for a satellite probe, managing high-throughput telemetry transmission and sensor data acquisition under strict memory and power constraints
- Optimized data pipelines using **multi-threading** and **interrupt-driven I/O**, reducing latency by 60% to ensure lossless packet transmission; validated flight dynamics via **MATLAB** simulations

Honors & Awards

Goldman Sachs Possibilities Summit: Selected Participant (2025)
William Lowell Putnam Competition: Top 44% (2024)
Quinnipiac University Competitive Programming: 1st Place (2024)
Science Olympiads: USACO Gold (2022-2023)

Technical Skills

Languages: C++, Python, Java, SQL, Haskell, MATLAB, JavaScript, Bash, LaTeX
Frameworks: Pandas, TensorFlow, FastAPI, React, spaCy, Streamlit
Developer Tools: Docker, Linux, Git, GitHub Actions, Qdrant, PostgreSQL, GROBID