Monroe Stephenson

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Profile

Versatile and impact-driven **Software Engineer** and **AI Researcher** with deep foundations in computer science, mathematics, and scalable systems. Currently building high-performance data infrastructure at an early-stage startup while pursuing an M.S. in Computer Science at Georgia Tech. Proven experience designing and deploying ML systems (NLP, deep learning, interpretability), building cloud-native infrastructure (Go, gRPC, Kafka, AWS), and conducting published research in machine learning theory and applied statistics. Adept at translating complex ideas into scalable products — passionate about making unstructured data usable, ethical AI systems, and shipping things that work.

Professional Experience

Founding Engineer *Apr 2024 – Present*
Cloudsquid, Berlin, Germany

- Architecting and optimizing real-time, event-driven AI data pipelines in Go, enhancing observability and explainability for large-scale unstructured data processing.
- Building high-throughput systems with gRPC, Kafka, and ClickHouse, enabling scalable infrastructure for ML model deployment and monitoring.
- Driving technical strategy with the founding team, shaping product direction and ensuring reliability, scalability, and performance from prototype to production.

Software Engineer *Aug 2024 – Apr 2025*
Project Eaden, Berlin, Germany

- Implemented advanced ML models (PyTorch, TensorFlow) for high-dimensional data analysis in food tech R&D, improving predictive accuracy of product performance by 25%.
- Deployed scalable APIs (FastAPI, gRPC) and CICD pipelines on AWS (Terraform, Docker), reducing model iteration cycles from days to hours.
- Led cross-functional collaborations, integrating complex ML pipelines with business metrics, contributing to a 15% reduction in production costs.

Software Engineering Intern (Research & Analytics) *Mar 2024 – Oct 2024*
Telis Energy, Remote

- Developed Python and PyQGIS scripts automating wind turbine layouts, enabling data-driven site planning and boosting renewable energy output efficiency by 30%.
- Implemented large-scale data ingestion and transformation pipelines (Apache Spark, Airflow) to handle multimodal datasets, accelerating environmental simulations by 40%.

Machine Learning Researcher (Fulbright Scholarship) *Fall 2023 – Fall 2024*
Max Planck Institute MiS, Leipzig, Germany

- Pioneered research on non-independent component analysis and interpretability in algebraic statistics for complex ML systems.
- Published findings in top-tier statistics journals (e.g., under review at Algebraic Statistics), presented at international conferences.

Education

M.S. in Computer Science (OMSCS) *2024 – Present*
Georgia Institute of Technology, USA
Focus: Distributed systems, scalable data infrastructure, deep learning, and AI.

B.A. in Mathematics *2019 – 2023*
Reed College, USA

Honors: President's Commendation for Excellence (Top 5%), Churchill Scholarship Nomination, Watzek Scholarship. Thesis on log-concavity of Kazhdan-Lusztig Polynomials in combinatorics.

Research Experience

Research Assistant (Undergraduate and REUs) *2019 – 2023*
Reed College; Texas Tech University; Hebrew University; University of Michigan; Portland State University

- Contributed to multiple NSF-funded REUs, investigating combinatorial geometry, commutative algebra, and network modeling for DDoS mitigation with the Abelian Sandpile model.
- Authored/co-authored several papers (preprints on arXiv) spanning ML theory, differential closure operators, and anisotropy on the moment curve (submitted to top-tier venues).
- Experience with HPC clusters, parallel computations, and model interpretability analyses.

Selected Publications

- Stephenson, M., Garrote-López, M. (2024). "Partitioned Independent Component Analysis." Submitted to *Algebraic Statistics Journal*.
- Adiprasito, K., Hou, K., Kiyohara, D., Koizumi, D., & Stephenson, M. (2022). "The Moment Curve Suffices." Under revision for *Duke Mathematical Journal*.
- Kenkel, J., McPherson, L., Page, J., Smolkin, D., Stephenson, M., Yang, F. (2021). "Asymptotic Behavior of Differential Powers." To appear in *Involve*.

(Other publications and preprints available upon request.)

Technical Skills

Programming:	Python, Go, C++, Java, TypeScript, SQL
Machine Learning:	PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Hugging Face Transformers
Data Engineering:	Apache Kafka, Spark, Airflow, ClickHouse
APIs & Frameworks:	FastAPI, gRPC, REST, Docker, Terraform
Cloud & DevOps:	AWS (EC2, S3, Lambda), GCP (Compute Engine, Dataflow), CI/CD, Kubernetes
Databases:	PostgreSQL, MongoDB, BigQuery, Redis
Systems & Methodologies:	Distributed Systems, HPC, Agile/Scrum, Git, Observability, Infrastructure as Code

Awards and Honors

- **Fulbright Research Scholarship** to Germany (2023)
- **Churchill Scholarship Nomination** (2022) - One of only two institute-wide nominees.
- **Sperling Scholarship Finalist** (awarded but declined) for full-ride Cambridge admission.
- **Aubrey Watzek Scholarship** for academic excellence in STEM at Reed College.
- President's Commendation for Excellence (2019–2023), Top 5% of graduating class at Reed.

Selected Presentations

- "Block Independent Component Analysis" – MPI MiS Algebraic Colloquium (Mar 2024)
- "Anisotropy on the Moment Curve" – Reed College Student Colloquium (Nov 2022)
- "Combinatorics of Coxeter Groups for ML Geometry" – Hebrew Univ. Grad Seminar (June 2022)

Additional Experience

- **SL(M) Leader** (2020–2023): Organized seminars connecting faculty, PhD students, and undergraduates to discuss cutting-edge research in mathematics and machine learning.
- **Math Drop-In Center Tutor** (2021–2023): Assisted students in advanced mathematics, linear algebra, and statistical modeling concepts key to ML research.
- **Equity and Social Justice Cohort (ESC)**: Engaged in initiatives to create inclusive academic communities and broaden STEM participation.

Languages

English:	Native
German:	B1 (intermediate)
Spanish:	A2 (basic)