EREN MENGES

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EDUCATION

B.S. Computer Science, NYU Tandon **Expected May 2028**

- Coursework: Design and Analysis of Algorithms, Linear Algebra, Probability/Statistics
- Minor in Quantum Technology and Math

SKILLS

ML: PyTorch | numpy | Transformer Models

Systems/Dev: Python (Professional) | C++ (Intermediate) | Linux/Debian | Bash

Research Interests: AI4Science | Graph Neural Networks (GNN) | Spatio-temporal modeling | Physics-informed ML

Languages: English: Fluent, **German:** Advanced (TELC B2), **Turkish:** Native

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EXPERIENCE

Machine Learning Research Intern, *C2SMART Center for Urban Mobility, NYU* **Jun 2025 - Aug 2025**

- Trained, benchmarked and profiled 7 trajectory prediction models on Argoverse2 to optimize the accuracy-efficiency trade-off for autonomous systems.
- Quantified model performance across diverse metrics (minADE/FDE, miss@2m), establishing a performance baseline of 0.56–0.80m error against 3.4–16ms inference latency.
- Validated the EMP architecture as a high-efficiency surrogate, maintaining MTR-level accuracy while reducing theoretical complexity by ~50% FLOPs and accelerating training throughput by 6× (8h vs 50h).
- Managed cloud GPU training on vast.ai (checkpoints, failure recovery, logs)

PROJECTS

Flood Denoising and Forecasting with STGCNNs **November 2025 - Present**

- Developing a Spatio-Temporal Graph Convolutional Network (STGCNN) to model flood dynamics across 229 physical sensor nodes in NYC, capturing both spatial topology and temporal dependencies.
- Engineering a real-time forecasting pipeline to predict water levels 30 minutes ahead, integrating LSTM modules to handle long-term temporal dependencies in noisy sensor data.
- Benchmarking deep learning architectures against classical baselines (XGBoost) to quantify gains in predictive accuracy and noise robustness.

Spectral Clustering with Linear Algebra **December 2025 - Present**

- Implementing Spectral Clustering algorithms from scratch to identify non-convex structures often misclassified by classical K-Means.
- Building a custom linear algebra module to compute Graph Laplacians and perform eigendecomposition, projecting high-dimensional data into lower-dimensional embedding spaces.

OTHER EXPERIENCE

Cyber Security Intern, *Istanbul Metropolitan Municipality* **Jan 2023**

- Developed Python automation scripts for firewall management, reducing manual daily operations for the network security team managing ~50k devices.

Selected Achievements: Semifinalist, HackKaradeniz National Hacking Competition ’22; Semifinalist, HackIstanbul National Hacking Competition ’21.