Tahir Tuzun

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EDUCATION

Stony Brook University   Stony Brook, NY
Bachelor of Science in Computer Science   *Jan. 2022 – May 2025*

EXPERIENCE

Research Assistant, Next-Location Prediction (REPLAY)   Jan. 2025 – May 2025
Stony Brook University   *Stony Brook, NY*

- **Led** exploratory data analysis on 3.3 million Gowalla & 9.45 million Foursquare check-ins, extracting hourly, daily, weekly & spatial features via KD-tree city mapping to inform model hyperparameters.
- **Reimplemented** the next-location prediction model in PyTorch, building a custom data pipeline, smoothed timestamp embeddings & flashback mechanism, replicating baseline performance (Recall@1 11%, MAP 26%).
- **Enhanced** model architecture with single- & multi-head attention, layer normalization, gradient clipping, & dual Gaussian temporal encoders, boosting Recall@1 from 10.9% to 11.7% & Recall@5 from 24.3% to 25.5%.
- **Developed** CPU-only Markov & LSTM prototypes achieving 25% top-1 accuracy on 100 POIs with sub-second inference & delivered a Flask-based web demo for real-time evaluation.

Software Engineering Intern   Jan. 2022 – May 2022
Pacific Northwest National Laboratory   *(Remote) Richland, WA*

- **Engineered** the Nanocartographer tool: developed real-time kinematic modeling routines & applied conversion matrix M to transform TEM double-tilt data into accurate stereographic atomic visualizations.
- **Built** a Python back end to normalize large TEM datasets, compute stereographic projections, convert to tip/tilt angles, & expose REST APIs for the interactive front end.
- **Collaborated** with microscopy researchers to integrate rotation-matrix frameworks & interface-mapping protocols for precise grain-boundary & lattice-orientation rendering.
- **Presented** project goals, algorithmic workflows, & live atomic-mapping demos to senior management & scientists.

PROJECTS

P4SBU: Parking Management System | *React, Node.js, MongoDB, Stripe, Mapbox*   Dec. 2024 – May 2025

- **Built** a full-stack parking management platform for SBU delivering live space availability, reservations, digital permits, & citation payments across 5 user roles.
- **Developed** responsive React/Vite + Tailwind UI & RESTful Node/Express API (MongoDB) with JWT-based RBAC; integrated Mapbox maps & Stripe checkout; Containerized & deployed to Heroku.
- **Authored** 25+ Cypress E2E & Jest unit tests, set up CI/CD & New Relic monitoring, achieving >90% coverage & zero-error performance under 1 k+ concurrent-user load tests.

CVTweak-AI: Resume Optimization Tool | *FastAPI, PostgreSQL, OpenAI API*   Feb. 2025 – July 2025

- **Developed** an AI-powered Chrome extension for resume optimization featuring cyberpunk UI, resume analysis, cover letter generation, & ATS compatibility scoring for job seekers.
- **Built** FastAPI backend with PostgreSQL/pgvector for semantic search, OpenAI GPT-4 integration for analysis, & deployed to Render with Docker containerization achieving sub-2s response times.
- **Implemented** Chrome extension with content script job extraction, local storage management, & real-time AI feedback; published to Chrome Web Store with comprehensive privacy policy compliance.
- **Engineered** resume-job matching algorithms using vector embeddings, keyword analysis, & semantic similarity scoring to provide targeted optimization recommendations & cover letter personalization.

TECHNICAL SKILLS

Languages & Technologies: Python, Java, C, JavaScript, TypeScript, R, OCaml, MIPS, SQL
Machine Learning & Data Science: PyTorch, TensorFlow, scikit-learn, pandas, NumPy, OpenAI API
Web & Backend Development: React, Node.js, Express, FastAPI, MongoDB, PostgreSQL, Docker, CI/CD pipelines

AWARDS & LEADERSHIP

Emerging Leader Award: Stony Brook University Inter-Fraternity & Sorority Council
Treasurer & Secretary: Kappa Sigma Fraternity, Sigma-Delta Chapter at Stony Brook University