TAEMIN KANG

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EDUCATION

Pennsylvania State University University Park, PA *Expected May 2027*

B.S. Computational Data Science & Statistics (Double Major) · Minor in Mathematics · Major GPA 3.54 / 4.0

Coursework: Machine Learning · Deep Learning Algorithms · Artificial Intelligence · Applied Data Mining (graduate) · Computer Structures and Algorithms · Linear Algebra · Probability Theory · Computational Statistics

EXPERIENCE

Solo Developer & Product Owner Artemis — AI Career Platform *Mar 2026 – Present*

- Built an AI career platform as sole engineer, product owner and architect: job tracking, assisted apply through a Chrome extension, résumé and cover-letter tailoring, networking CRM, and interview preparation.
- Self-host Qwen3.5-9B (4-bit AWQ, vLLM) on a single 16 GB GPU for nightly batch parsing of job postings: 318K+ calls at no marginal cost versus an estimated $312–513 on a commercial API.
- Showed a 1,652-employer lookup table closes a 16-point industry-classification gap between the self-hosted 9B and a commercial model (71.9% → 90.7% exact vs 88.1%), graded blind on 300 random postings; caught a harness bug that had reported 100% precision as 18%.
- Selected the embedding model by measurement on the platform's own labels: Qwen3-Embedding-0.6B beat multilingual-e5 and bge-m3 on every metric (AUC 0.906 vs 0.855 / 0.690).
- Diagnosed fit-score miscalibration by replaying production calls (skill dominance r = 0.969, −0.52 pt bias, 8 distinct scores across 23 calls); a weighted rubric, few-shot anchors and a coherence check brought production to −0.08 pt bias across 30 distinct scores (n = 123).
- Measured fabrication in LLM résumé tailoring with an adversarial test (assertive prompt 6/6, conservative 2/6) and added a second-model audit that never sees the user's own instruction; flagged drafts fell from 25/76 to 2/17 after a prompt fix.
- Stood up LLM evaluation infrastructure: a 6-suite golden eval harness, regression replay of stored production calls, a hash-versioned prompt registry, per-call cost metering, and a CI gate on prompt changes.
- Engineered a Postgres-native async ingestion pipeline that seeds ~830 company boards nightly across the major ATS platforms into a shared index of 300K+ postings, with a multi-tier cache and SHA-256 content-hash dedup that resolves duplicates on a $0 cache-hit path.
- Built posting-lifecycle hygiene over that index (active/expired classification, dead-link and garbage-record detection, periodic revalidation) plus OCR-based résumé ingestion that extracts structured profile data to drive personalized scoring.

Intelligence Analyst Korea Defense Intelligence Command *Dec 2023 – Jun 2025*

- Built a Python NLP pipeline that classified 150+ unstructured intelligence reports, cutting manual analysis time 60%.
- Developed an anomaly-detection system flagging high-priority events at 85% precision; synthesized findings into executive briefings.

RESEARCH

Undergraduate Researcher — Power-System Stability & Oscillation Prediction Penn State EECS *Sep 2026 – Present*

EECS Undergraduate Research Program · Advised by Prof. Yan Li

- Funded EECS research award; developing machine-learning models for power-system stability assessment and oscillation prediction from PMU time-series measurements.
- Working toward topology-aware, physics-informed graph neural networks that represent grid structure directly (buses as nodes, transmission lines as edges).

Undergraduate Researcher — Bayesian Volatility & Tail-Risk Modeling Penn State SURE Program *May 2026 – Jul 2026*

Department of Statistics · Mentor: Dr. ByeongJip Kim · PI: Prof. Xiaoyue Niu

- Implemented GARCH and particle-filter stochastic-volatility models from scratch in four specifications, validating each by synthetic parameter recovery, and applied Bayesian online changepoint detection to volatility break identification.
- Designed a pre-registered detection experiment (matched alarm rates, block-bootstrap significance, planted-signal positive controls, power analysis) and falsified my own apparent positive result, decomposing a 42% detection rate ($p < 0.001$) into trivially recoverable mid-episode detections and establishing a powered null with an identified mechanism.

PROJECTS

Project Eureka — Korean-Market Data Infrastructure solo *Feb 2026 – Present*

- Architected and operate a 78 GB PostgreSQL + TimescaleDB platform (~160M rows across 89 tables and 18 hypertables) fed by 26 scheduled ingestion jobs over REST/SDMX APIs and anti-bot crawlers, with a dead-letter retry queue.
- Deployed KR-FinBERT GPU sentiment inference over 929K Korean filings and news documents, using BFloat16 with torch.compile and CUDA-OOM-adaptive batching.
- Implemented 121 registered features across two layers with EWMA and rolling time-series normalization and market-relative (beta / alpha) signals.
- Operate self-healing multi-day backfills (file lock, checkpoint, resume) that reconstructed 342K rows spanning 2008–2023 with no manual intervention, plus standing data-quality automation and daily health alerting.

SKILLS

PROGRAMMING & DATA Python · SQL · R · Scala · pandas · NumPy · SciPy · PostgreSQL · TimescaleDB · pgvector · FastAPI · Apache Spark · GitHub Actions CI

ML / DL PyTorch · Hugging Face Transformers · scikit-learn · XGBoost / LightGBM / CatBoost · graph neural networks · variational inference · sequence & time-series models

LLM SYSTEMS vLLM serving · quantized serving (AWQ) · embedding model evaluation · structured output · Model Context Protocol servers · prompt evaluation & LLMOps · Qwen · KR-FinBERT

STATISTICS Bayesian inference (MCMC, SMC, VI) · time-series forecasting (ARIMA, GARCH, stochastic volatility, state-space) · forecast calibration · hypothesis testing · paired bootstrap comparison · power analysis

SPOKEN Korean (native) · English (fluent) · Mandarin Chinese (HSK 5, 270/300)

HONORS

Sung and Fumi Lee Scholarship — Penn State (Fall 2026) · Mu Sigma Rho, National Statistics Honor Society · Corps & Division Commander Commendations — Republic of Korea Army