# William Liao

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## Education

**University of Maryland, College Park** College Park, MD (Aug. 2020 – May. 2024)

- Bachelor of Science - BS, Computer Science GPA: 3.94 / 4.00
- Bachelor of Science - BS, Mathematics
- Banneker/Key (Full Ride) Scholarship Recipient

## Work Experience

**Amazon Web Services, Inc.**

Software Development Engineer Seattle, WA (Jul. 2024 –)

- Owned end-to-end design of task dispatcher for multi-tenant orchestration platform, supporting 1000+ TPS per tenant with configurable scheduling strategies (metered, burst, exponential). Implemented distributed token-bucket throttling to guarantee tenant isolation and prevent noisy-neighbor degradation. (Java)
- Designed event pipeline consuming DynamoDB streams via Lambda, emitting workflow and status events to EventBridge. Implemented batch processing with bisect-on-failure for fault isolation and operator tooling to bypass poison-pill records.
- Led regional expansion of distributed document store to 2 new same-partition regions, requiring careful orchestration of control plane self-bootstrapping on the data plane. Extended CI/CD pipelines and IaC; authored documentation that accelerated subsequent region builds.
- Designed statistics aggregation component that processes DynamoDB streams from a sharded task-state table, batching and aggregating changes across shards to efficiently compute per-job task state counts without per-record write overhead.
- Built automated backfill tooling (Step Functions, Lambda) to re-index 1M+ documents into ElasticSearch after cluster failures, reducing recovery time from dozens of manual hours to under 24 hours automated.

**University of Maryland**

Teaching Assistant College Park, MD (Aug. 2021 – Dec. 2023)

- Led discussion/lab sections to reinforce class concepts and introduce extra material.
- Held office hours; graded projects and exams.
- Classes TAed: CMSC216 - Intro. to Computer Systems; CMSC351 - Algorithms

**Amazon Web Services, Inc.**

Software Development Engineer Intern Seattle, WA (Jun. 2023 – Aug. 2023)

- Designed and implemented paginated ETL pipeline (Lambda, Step Functions) to export data from multi-region document store to S3, with checkpointing for outage recovery. Used DynamoDB GSI to isolate export reads from the critical write path.

**Capital One**

Software Engineer Intern (Technology Internship Program - Center for Machine Learning) McLean, VA (Jun. 2022 – Aug. 2022)

- Designed and implemented feature serving API (Flask, DynamoDB) to provide real-time feature retrieval for ML model inference on fraud detection platform. (Python)
- Trained and optimized XGBoost model for credit card fraud detection using Dask for parallel processing; deployed to production Kubernetes cluster as an API microservice.

## Projects, Activities, and Awards

**Adversarial Communication in Multi-Agent Reinforcement Learning** (Jan. 2023 - May. 2023)

- Investigated the effectiveness of attention-based methods for improving total reward in Multi-Agent RL settings with benign and adversarial communication among agents.
- Designed and implemented approach in PyTorch on top of standard PPO traning algorithm.

**International Collegiate Programming Contest (ICPC)** Feb. 2023

- Mid-Atlantic USA Regional - Top 25%

## Skills

**Languages:** Java, Python, C; Familiarity in: Rust, C++, OCaml

**AWS:** DynamoDB, Lambda, Step Functions, Kinesis, EventBridge, S3, CDK, CloudFormation

**Tools:** Kubernetes, Docker, Flask, Git, NumPy, Pandas, Scikit-learn, XGBoost, Dask