

Patrick Pei

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EDUCATION

Northwestern University

Master of Science in Computer Engineering

Evanston, IL

Sep 2020 – Dec 2021

University of California, San Diego

Bachelor of Science in Computer Engineering

San Diego, CA

Sep 2016 – Jun 2020

EXPERIENCE

Coursera Inc.

Senior Software Engineer

Mountain View, CA

Mar 2024 – Present

- **Allowlist Management Platform:** Led P0 project with 4 engineers implementing near real-time data platform for courses/specializations at contract-level, reducing customer time from 2 weeks to under 10 seconds. Built RPC microservice with Java/gRPC and implemented conflict detection using Apache Airflow.
- **Badge Management Platform:** Led team of 3 engineers developing stream-processing platform for real-time badge management across organizations, leading to over \$10M in contract ACVs. Built Kafka Connect CDC workflow with Amazon MSK for data consistency.
- **Internal Tools:** Launched Retool-based internal management software reducing engineering time from 95 minutes to under 5 seconds. Implemented scalable batch data ingestion pipeline from AWS RDS to internal EDW tables.

Coursera Inc.

Software Engineer II

Mountain View, CA

Mar 2023 – Mar 2024

- **Clips Management Platform:** Led team of 3 engineers building large-scale, fault-tolerant distributed system for clips metadata management with full CRUD operations. Achieved 80% reduction in clips metadata update time through parallel processing and multi-threading.
- **Performance Optimization:** Implemented distributed Redis Cache reducing P95/P99 latency by 80%/92% respectively. Enforced data integrity through application-level transactions with well-defined boundaries for downstream services.
- **Microservices Architecture:** Developed Java Spring Boot RESTful microservice for clips CRUD operations supporting concurrent, non-conflicting batch updates with distributed workload processing.

Coursera Inc.

Software Engineer I

Mountain View, CA

Jan 2022 – Mar 2023

- **Java Migration Platform:** Led Contract and User service migrations from Scala to Java, phasing out 12 legacy APIs and deprecating approximately 5K lines of code. Implemented Java migration library with automated double read/write used in 15 migrations across 4 teams.
- **gRPC Microservices:** Developed gRPC microservices: 12 APIs for contract utilization (approximately 3K QPS, 98% coverage) and 7 APIs for learner profile (approximately 200 QPS, 95% coverage) with comprehensive test coverage and performance optimization.
- **System Architecture:** Designed and implemented scalable microservice architecture supporting high-throughput data processing and real-time updates across multiple internal teams and services.

SKILLS

- **Languages:** Java, Scala, JavaScript, Python, SQL
- **Technologies:** AWS (DynamoDB, Lambda, EKS, MSK, RDS, Aurora), Kafka, PostgreSQL, MySQL
- **Frameworks:** Spring Boot, GraphQL, gRPC, Apache Airflow
- **Tools:** Terraform, Retool, Redis, Elasticsearch, Docker