

MICHAEL IWANEK

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EDUCATION

B.S - Computer Science, Oregon State University - School of Electrical Engineering and Computer Science 2022 - Mar 2024
Graduated | Major GPA: 4.0 | Honor Roll 2022-2024

- Completed Coursework: Algorithms, Data Structures, Operating Systems, Discrete Math, CS 161/162, x86 Assembly, Web Dev, Databases, Software Eng I, Mobile Dev, Software Eng II, Computer Networks, Computer Graphics, Capstone

SKILLS

Languages C#, TypeScript, C++, C, React.js, Express, Node, MongoDB, Python, JavaScript, Java, GraphQL, SQL, PostgreSQL
Software Apache Kafka, OpenSearch, RabbitMQ, Boto3, AWS, ECS, Docker, Jira, Axios, Postman, AWS CDK, Git

WORK EXPERIENCE

Full Stack Software Engineer

PNNL - Pacific Northwest National Laboratory

06 2023 - Present

Hybrid - Richland, WA

**Internship previous to 04/2024*

- Active Q Clearance - contributing to projects under the National Security Directorate (NSD) for various stakeholders.
- Develop scalable backend services in .NET (C#) and Python for a distributed application ecosystem, enabling machine learning pipelines. Architect asynchronous APIs and queue-backed background services to handle parallel workloads and long-running tasks. Integrate EF Core, LINQ, OpenSearch, and GraphQL to support efficient data retrieval and machine learning inference. Ensure robust test coverage with Moq and pytest.
- Design asynchronous messaging pipelines with Kafka, SQS, and RabbitMQ to enable decoupled, fault-tolerant communication across distributed systems. Implement consumer groups, retry logic, and dead-letter queues to support parallel processing, dynamic scaling, and resilient failure recovery.
- Build advanced TypeScript components in a full-stack role, leveraging XState for state orchestration and Apollo Client for GraphQL integration. Implement recursive state machines, callback actors, and deeply nested data workflows. Develop reusable UI systems with Tailwind and Blueprint, including filtered image grids, multi-step forms, and hierarchical navigation based on Figma designs.
- Architect PostgreSQL schemas to support datasets exceeding 100 million records, applying partitioning and indexing strategies for scalable performance. Develop custom release scripts for schema evolution, index/constraint tuning, and data migration. Offload resource-intensive queries to OpenSearch clusters for efficient filtering and aggregation.
- Create multithreaded Python microservices for data ingestion, database operations, and infrastructure automation. Use AWS CDK to provision resources such as Lambdas, CloudFormation stacks, and SNS topics via Boto3. Train ML models using PyTorch/Detectron2 on labeled datasets, and deploy them to AWS SageMaker endpoints for ML inference.

PROJECTS

Ski and Rock Climbing E-Commerce Store (.NET/ C#/ TypeScript / AWS ECS) - [GitHub](#) - [Live](#)

- A full-stack REI/Amazon clone with product search, filtering, OAuth2.0, shopping carts, PayPal API integration, and order submission. A C# API uses Entity Framework Core to communicate with a PostgreSQL database - hosted on AWS RDS.
- Deployed on an AWS ECS cluster via serverless AWS Fargate. Implemented a CI/CD pipeline via a GitHub Actions .yaml file which re-builds and deploys new docker images to ECR on repo changes. Provisioned the instance with an EC2 Load Balancer and configured domain routing via Route 53.

PyTorch Image Classification App (Java Spring Boot/ Flask/ TypeScript/ EC2) - [GitHub](#) - [Live](#)

- A full stack website (EC2 instance), where users can upload images or image URLs to a deployed PyTorch Faster R-CNN computer vision model.
- A Java Spring Boot API invokes a Flask microservice, to pass an image through a trained neural network. The front end plots the resulting class accuracy scores and bounding boxes on the image from the model's response.

Portfolio Website - Additional Projects (React.js/ EC2) [GitHub](#) - [Live](#)

- Custom-built TypeScript portfolio site hosted on AWS EC2. Features fully responsive design and reusable components to display project screenshots and GIFs in a carousel slider format.