

# Indrajeet Aditya Roy

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## EDUCATION

Northeastern University, Boston, MA

Sept 2023 - May 2025

Master of Science, Computer Engineering (Artificial Intelligence & Machine Learning) GPA: 3.89

Coursework: Supervised ML, Unsupervised ML, Ensemble Learning, Deep Learning, Reinforcement Learning, Data Mining, NLP

Iowa State University, Ames, IA

Aug 2018 - May 2022

Bachelor of Science, Software Engineering

## SKILLS

**Programming Languages:** Java, Python, C, C++, R, Elixir, Ruby, Javascript, Typescript, HTML & CSS, Kotlin

**Python Libraries:** Pandas, Numpy, Matplotlib, Seaborn, Plotly, Scrapy, Requests, Sql-alchemy

**ML Libraries:** Tensorflow, Keras, Scikit-learn, Scikit-optimize, Scipy, PyTorch, SpaCy, NLTK, XGBoost, PyCaret, HuggingFace

**ML Ops:** MLFlow, Weights & Biases, Prometheus, Grafana

**Web Development:** Django, Flask, React (Axios, Apollo, Redux, Redux-toolkit), Next.js, Node.js, D3.js, Rails, Spring, Spring Boot

**Mobile Development Libraries:** Android (Retrofit, Glide, Hilt/Dagger, Room, RxJava, Coroutines, Moshi, LiveData, ViewModel)

**Databases:** Relational (MySQL, PostgreSQL), NoSQL (DynamoDB, Redis)

**Dev Tools/Applications:** Git, Jenkins, Docker, Docker-compose, Kafka, Apache Spark, Algolia, Datadog, Bugsnag

**Cloud Platforms:** AWS (API Gateway, Lambda, EC2, DynamoDB, RDS, S3, SQS)

## PROJECTS ([www.indrajeetrovportfolio.com](https://www.indrajeetrovportfolio.com))

### Neural Network Optimization for Minimized Error Probabilistic Classification

- Implemented softmax and ReLU activated FNN using Tensorflow
- Trained FNN for posterior probability estimation and MAP classification to reduce classification error
- Utilized Scikit-learn for iterative refinement, hyperparameter tuning, and model evaluation

### News Article Classification

- Utilized Scikit-learn to classify 18,000 news posts into 20 topic groups using K-Means clustering
- Employed TF-IDF for feature extraction and PCA for dimensionality reduction

### Q-Learning with $\epsilon$ -Greedy Exploration

- Implemented Q-Learning with an  $\epsilon$ -Greedy strategy within an OpenAI Gym grid environment
- Utilized Stable Baselines for learning algorithm implementation
- Utilized TensorFlow and PyTorch for training and optimizing CNN for Q-function approximation

### Bayesian Vehicle Location Optimization in 2D space

- Optimized positional accuracy in a 2D space using Bayesian techniques such as range measurements and MAP estimation.
- Utilized Scipy and NumPy for computation and probabilistic analysis.

## EXPERIENCE

The RealReal (San Francisco, CA)

June 2022 – Aug 2023

Software Engineer

- **Project: Customer360 - User data aggregation & analytics tool**
  - **Objective:** Optimize data-driven decision making based on user profile, preferences and behavior insights
  - **Action:** Developed API microservices for concurrent, real-time analysis and aggregation from multiple data sources. Integrated Algolia indexing and querying for search mechanism. Implemented caching using Redis for real-time data sync and verification.
  - **Impact:** Achieved consolidated user data single source of truth, optimizing efficiency and precision of data analytics and generated insights.
- **Project: Engineering Org Feature Flag Vendor Migration**
  - **Objective:** Transition engineering org feature flag service vendor from LaunchDarkly to Harness
  - **Action:** Developed data migration pipeline for automated ETL and redeployment of feature flag configurations between the two platforms. Implemented JSON schema-based data validation to ensure the consistency and validity of feature flag settings.
  - **Impact:** Achieved org vendor cost optimization and streamlined system transition for developers
- **Project: Get Paid Now - User consignment program**
  - **Objective:** Boost user consignment traffic.
  - **Action:** Developed API microservices for creating an automated consignment processing pipeline to support React frontend. Integrated Kafka for real time event-driven data processing and notifications. Implemented search using OpenSearch and Algolia, integrated into a React frontend built using Axios, Apollo, Redux and Next.js.
  - **Impact:** Increased user consignment traffic and user retention rates post feature launch

The RealReal (San Francisco, CA)

June 2021 – Aug 2021

Software Engineering Intern

Refactored The RealReal web platform and optimized lighthouse score. Migrated Elixir Phoenix framework to a React ecosystem. Utilized (Redux, Axios, Apollo), Next.js for server-side rendering and static generation, Webpack for bundling and asset optimization and Jest for unit testing.

Carlin Fit (Philadelphia, PA)

May 2020 – Aug 2020

Software Engineering Intern

Developed ios/android mobile app for communication and pairing with UV light hardware component using Swift (iOS), Java/Kotlin (Android) and Python Flask (API). Successfully implemented fully functional beta versions of the ios and android platforms.

## RESEARCH

- Mitigating Deanonymization and Denial-of-Service (DoS) Attacks in Decentralized Networks ([View Paper](#))