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/Unsupervised Machine Learning, Deep Learning, Reinforcement Learning, Natural Language Processing, Data Visualization, Parallel Processing for Data Analytics, Data Mining Techniques, Applied Probability and Stochastic Processes

Iowa State University | Ames, IA Aug 2018 - May 2022
- **Bachelor of Science, Software Engineering**

SKILLS

- **Languages:** Java, Python, GraphQL, R, Ruby, Elixir, Javascript, Typescript, HTML, HTML ERB, CSS, C, C++
- **Python Libraries:** Pandas, Numpy, Matplotlib, Seaborn, Plotly, NetworkX, statsmodels, Scrapy, Beautiful Soup, Requests
- **ML Frameworks/Libraries:** Keras, Tensorflow, PyTorch, Scikit-learn, Scipy, SpaCy, NLTK, Hugging Face Transformers
- **Web Frameworks/Libraries:** Ruby Rails, Elixir Phoenix, Django, Flask, FastAPI, React, Axios, Apollo, Redux, Redux-toolkit, Next.js, Node.js
- **DBMS:** Relational (MySQL, PostgreSQL), NoSQL (DynamoDB, Cassandra, Neo4j, Redis)
- **Data Tools/Frameworks:** Spark, Hadoop, Kafka, RabbitMQ
- **SDE Tools/Applications:** Git, Docker, Datadog, Bugsnag, Prometheus, Grafana
- **Cloud Tools/Services:** Algolia, AWS (EMR, EC2, DynamoDB, RDS, S3), Terraform

PROFESSIONAL EXPERIENCE

Amwell | Boston, MA June 2024 - Aug 2024
Software Engineering Intern
- Integrated Validic with Amwell Conversa health platform enabling EHR data synchronization from health monitoring apps and devices into user automated healthcare conversations, improving user engagement and care with data driven personalization and analysis.
- Developed RESTful Ruby Rails API services for interfacing with Validic API, utilized Apache Spark for large EHR datasets processing, and AWS DynamoDB for processed data store and utilization.
- Implemented user health app connection and monitoring dashboard in VueJS, streamlining user device management.

The RealReal | San Francisco, CA June 2022 – May 2023
Software Engineer
- Refactored and migrated The RealReal web platform from Elixir Phoenix framework to React ecosystem improving usability, Lighthouse score and web performance metrics using Redux for state management, Axios and Apollo for API interactions, Next.js for server-side rendering and static generation and Webpack for optimized bundling and asset management.
- Researched development strategies to enable the engineering organization's feature flag platform migration from LaunchDarkly to Harness.
- Developed tool to pipeline and warehouse migration data for automated ETL operations ensuring data completeness and validity, and implemented incremental transfer of feature flag configurations, achieving vendor cost reductions and streamlining platform migration.
- Developed Ruby Rails and Elixir API services implementing 'Customer360', an internal engineering data platform, utilized AWS RDS for data store, Kafka for multi-source data streaming and batch processing, Algolia for search functionality and Redis caching for data access optimization, resulting in a centralized aggregated user data source for analytics and ML.

The RealReal | San Francisco, CA June 2021 – Aug 2021
Software Engineering Intern
- Developed RESTful Ruby Rails and GraphQL Elixir API services enabling efficient and scalable CRUD operations; utilized AWS RDS for data store, Redis caching for data access optimization, and Kafka message broker for distributed inter-service communication, implementing the 'Get Paid Now' user program.
- Implemented configuration and administrative control dashboard in Ruby Rails, streamlining admin management of user program.

Carlin Fit | West Chester, PA May 2020 – Aug 2020
Software Engineering Intern
- Developed Android companion app to interface with the UV light hardware device component of the Purple-Bug UV ride-share cleaning product, utilizing Java/Kotlin, Retrofit, Glide, Room, RxJava, and Coroutines.

PROJECTS & RESEARCH (www.indrajeetroyportfolio.com)

- **Mitigation techniques against deanonymization and DOS Attacks in Decentralized Networks**
  Analysis of attack vectors and Tor network architecture vulnerabilities focusing on deanonymization and Denial-of-Service (DoS) attacks in decentralized networks and mitigating strategies to safeguard anonymity and maintain network integrity.

- **Enhancing Research Paper Summarization Through Language Abstractive Methods, LLM Fine-tuning and RAG**
  Enhancement of academic journal summarization precision and comprehension by integrating language model fine-tuning methodologies such as Parameter-Efficient Fine-Tuning (PEFT) and Low-Rank Adaptation (LoRA) with Retrieval-Augmented Generation (RAG).

- **Reinforcement Learning Approach for Complex Maze Navigation and Spatial Decision Making**
  Implemented Q-Learning, SARSA, and Actor-Critic Reinforcement Learning algorithm based agents using PyTorch for complex environment navigation, evaluating algorithm performance in achieving optimal outcomes under specific environment conditions and different reward functions.

- **Supervised Learning Approach for automated credit approvals**
  Developed a supervised learning model using Scikit-learn with data imputation, one-hot feature encoding, z-score normalization and GridSearchCV model hyperparameter tuning and optimization achieving 82% accuracy in credit approval decisions.