

Ryan Newkirk

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EDUCATION

NORTHWESTERN UNIVERSITY MCCORMICK SCHOOL OF ENGINEERING

Evanston, IL

Master's Degree in Computer Science and Bachelor's Degree in Computer Science

Jun 2024

Major in Computer Science; Minor in Data Science & Engineering | Bachelor's GPA: 3.82 | Master's GPA: 4.00

Relevant Coursework: Agile Development, Computer Networking, Data Privacy, Scalable Software Architecture, Deep Learning, Computer Security, Statistical Language Modeling, Operating Systems, Machine Learning, Data Structures & Algorithms

WORK EXPERIENCE

HIVE AI

San Francisco, CA

Backend Software Engineer II - *Mensio (Hive Media Team)*

Feb 2026 – Present

Backend Software Engineer I

Jul 2024 – Feb 2026

- Lead developer (L4) for an AI-Powered B2B platform for Media Intelligence, enabling granular, cross-platform measurement of advertising, branded content, and sponsorship in TV/streaming/digital/media. Responsible for the full lifecycle of feature development, from database design to deployment, while managing the data pipelines that power our AI analytics.
- Designed and optimized large-scale backend services (TypeScript, Python, Scala/Spark), delivering high-performance computation for logo detection and social/viewership analytics.
- Optimized query performance and database indexing to significantly reduce report latency. Ensured data integrity through CI/CD workflows and Grafana monitoring, and led enterprise-scale backfills, data audits/deduplication, schema upgrades. Refactored querying system to reduce execution time for a majority of logo detection reports by more than half.
- Built and maintained Apache Spark/Scala data pipelines for TV brand transcription. Developed internal admin tooling and custom data ingestion scripts, streamlining operations for cross-functional teams and enterprise clients.
- Managed on-call incident response, live TV channel recording, social data pulls, and daily pipeline operations, performing direct client requests to ensure high system availability and support business analytics teams.

SQUARE (BLOCK, INC.)

(Remote) Chicago, IL

Software Engineer Intern - *Developers Experience*

May 2022 - Sep 2022, Jun 2023 – Sep 2023

- Integrated user testing capabilities into the Web Payments SDK reference. Used Svelte, React, Optimizely, OneTrust, internal service APIs, Cypress, GitHub. Created and deployed an A/B test for a frontend feature. Authored Design Doc, Experimentation Doc, and Runbook. Led scrum meetings using Jira, Trello. Ran testing party.
- Prototyped an automated phone calling system for Square sellers using ChatGPT API, Square APIs, Twilio, Amazon Lex.
- Developed a new frontend feature for Square's Web Payment SDK website for users to simulate making payments using an in-browser code editor. Used Svelte, Typescript (HTML/CSS/JS), CodeMirror API, Cypress, GitHub.
- Developed a cross-platform discount and marketing promotion sharing tool for Cash App/Square Seller Dashboard.

ARGONNE NATIONAL LABORATORY

(Remote) Chicago, IL

Software Development Intern - *Energy Systems Division*

Jun 2021 – May 2022

- Developed Python scripts and a MySQL database to collect customer outage data from 232 million households for power outage forecasting. Implemented geo-mapping functions for comprehensive power outage analysis.

PROJECTS

NLP RESEARCH PAPER - "Emergent Positional Embeddings in GPT" x-ry.github.io/LING.pdf

Jun 2024

- Co-authored a paper on mechanistic interpretability, investigating positional embeddings of words. Performed data extraction, cleaning and analysis; Conducted training with Python (PyTorch, spaCy, Jupyter, Conda, TransformerLens).

NATURAL LANGUAGE PROCESSING RESEARCH PAPER - "CRAFT" x-ry.github.io/CRAFT.pdf

Jun 2023

- Created an NLP model for cross-domain text summarization using incremental fine tuning on pre-trained models, with superior performance over PEGASUS on CNN/DailyMail benchmarks (Python, SBERT, HuggingFace Transformers).

IEEE NORTHWESTERN CHAPTER PROJECT - "REMEDY"

Evanston, IL

Project Manager

Sep 2022 – Apr 2023

- 2023 Showcase Award Winning Project out of 14 teams. Managed a team of four students, led the development of a health/medicine management app. Utilized an ensemble ML model to scan prescription bottles and built a GPT-powered assistant. Used React, Firebase API, Python, Google Vision API, spaCy, GPT, PyTorch, Tailwind CSS, and Mantine.

TECHNICAL SKILLS

Python (PyTorch, TensorFlow, Jupyter), Javascript (Typescript, React, Node, Svelte), C++, Java, R, Cypress (A/B test), Fullstack, AWS (S3, Lambda, RDS), Git, GitHub, AI (NLP, LLM), PostgreSQL, NoSQL, Big Data Pipelines (Apache Spark, Scala), CI/CD