

Dawson Ren

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SUMMARY

Problem-solver who can scope ambiguous business challenges with non-technical stakeholders, design statistical and machine learning algorithms, and ship scalable production Python software.

EDUCATION

Northwestern University, McCormick School of Engineering

Master of Science, Industrial Engineering and Management Sciences

Bachelor of Science with Honors, Industrial Engineering and Management Sciences (Cum Laude)

Evanston, IL

September 2026

June 2024

PROFESSIONAL EXPERIENCE

Reinsurance Group of America

June 2026 – August 2026

Data Science and AI Intern, Model Risk Management — Enterprise Risk Analytics

Chesterfield, MO

- Sole engineer for a predictive/AI model discrimination testing platform. Reviewed legislation in 8 jurisdictions, iterated on business requirements, and deployed to production on Databricks in 10 weeks, owning every phase of the software development life cycle and saving a leadership-estimated ~2,500 analyst hours annually.
- Built the platform in Python (Litestar, Pydantic, ~20 REST endpoints) with a React frontend, applying software development standards (CI/CD, typing/linting, unit tests) to deliver maintainable software (~10k LOC).
- Implemented 12 statistical algorithms to test predictive/AI models for discrimination, leveraging PySpark to run large-scale analytics over 100M+ row datasets in minutes.
- Advised non-technical leadership and consultants from KPMG on the firm's global bias testing guidelines, identifying a key gap for continuous model outputs and suggesting the replacement methodology adopted into corporate policy.
- Drove adoption across a 70-person global data science organization for compliance: ran 20+ discovery interviews across seven business units, engineered authorization scheme to comply with data privacy requirements which unblocked EU adoption, and delivered an hour-long training to model owners, actuaries, and three regional VPs of AI.

Caterpillar Inc.

June 2023 – August 2023

AI and Advanced Diagnostics Intern

Chicago, IL

- Developed and validated a multiclass XGBoost classifier in Python on 3M+ oil samples using stratified cross-validation, improving absolute F1 score by 15 points over the existing rules-based system and increasing diagnostic efficiency at 70+ fluid analysis labs worldwide.
- Prototyped a generative AI application to summarize vehicle inspections using open-source LLMs (LLaMA) on AWS EC2 and presented the solution to Caterpillar's Analytics and AI Center of Excellence.

Applications and Backend Intern

June 2022 – February 2023

- Built user interface components for Caterpillar's flagship fleet management application and optimized PostgreSQL queries for an enterprise database restructuring project.

RESEARCH AND TEACHING EXPERIENCE

Northwestern University — Graduate Research Assistant

August 2024 – June 2026

Predictive Science and Engineering Design (PS&ED) Program

Evanston, IL

- Designed a novel explainable AI (XAI) algorithm to interpret black-box machine learning predictions, reducing variability in local explanations by up to 5x.
- Engineered high-performance computing GPU simulations of silicon grain boundaries to guide the manufacturing of next-generation thermoelectric materials for space power generation.
- Analyzed e-commerce algorithms using statistical machine learning to optimize free shipping thresholds. Studied the ability of LLMs to generate ordering policies for inventory management problems.
- Created educational resources to teach queueing theory and inventory management to Kellogg MBA students.

Northwestern University — Graduate Teaching Assistant, Machine Learning II

September 2025 – June 2026

- Designed and taught 8 lab sessions for the MS in Machine Learning and Data Science program covering regression, neural networks, tree ensembles, and model interpretation.
- Designed and taught a three-session, six-hour statistics bootcamp for the incoming IEMS PhD cohort.

TECHNICAL SKILLS

Programming Languages: Python (primary), TypeScript, SQL, Bash

Machine Learning and AI: scikit-learn, PyTorch, MLflow, LLM APIs, algorithm design

Data and Distributed Computing: PySpark, Databricks, pandas, Polars, NumPy, high-performance computing

Software Engineering: React, Litestar, FastAPI, Pydantic, REST APIs, OpenAPI, PostgreSQL, Agile

Cloud and DevOps: AWS (EC2, S3, Lambda), Docker, Git, Jenkins, Terraform, CI/CD