NICK OUELLET

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Data Scientist and Developer building data and modelling tooling and web frontends.

EXPERIENCE

Director of Data Science: Travelers - Personal Insurance AI **March 2023 – Present**

- Create prompt techniques and pipelines for solving complex and multi-stage reasoning problems for underwriters.
- Develop customer-facing retrieval solutions for insurance comprehension and site navigation.
- Multimodal vision-language research and tuning for zero-shot applications.
- Lead generative AI research applications for underwriting and discovery.
- Lead a team of data scientists on generative AI and deep learning research.

Manager of Data Science: Travelers - Personal Insurance AI **March 2022 – March 2023**

- Developing in-house semantic search engine with deep learning based natural language processing.
- Building a search frontend with Streamlit and a backend in FastAPI.
- Research AutoML Topic Modelling potential.
- Train deep vision models on millions of images with unique channel distillation procedures.

Manager of Data Science: Travelers - Claim AI **March 2021 – March 2022**

- Developed prediction platform utilizing ElasticSearch backend with React frontend deployed in AWS with Docker for productionalizing and monitoring a deep learning system.
- Managed exploration of techniques to model on extremely long sequences of text in supervised and unsupervised fashions.
- Made tooling for deep learning vision and language model unsupervised creation and evaluation.
- Experimented with generative methods for imagery data upsampling including GANs and Variational AutoEncoders.
- Constructed a modelling pipeline to pull from a tiled image API with geocoding and spatial manipulation for aerial imagery EDA and robust model creation.

Associate Data Science Researcher: Travelers - Claim AI **April 2020 – March 2021**

- Created data-driven deep learning models to solve vision and nlp problems of Travelers claims including chatbots, catastrophy detection, policy verification and segmentation.
- Integrated the inherently exploratory data science workflow into a CI/CD development cycle.
- Managed an intern to develop a model refresh and enhancement based on integrating unstructured text features and multiclass model consolidation.
- Built a tool to extract and parse text data from Hadoop creating tokens for downstream modelling.

Senior Data Science Consultant: Travelers - Claim Research **April 2019 – April 2020**

- Led team to deploy the first real-time claim model in a container environment, establishing best practices for production code architecture, real-time model APIs, and operational reporting data storage/retrieval.
- Monitored production models to ensure consistent operation and developed a prototype platform for aggregating social media sentiment analysis about the company.
- Trained a deep learning vision model that won an enterprise-level national competition (Gartner).
- Designed and implemented a tool for extracting table metadata and executing queries against primary databases.

Data Science Consultant: Travelers - Claim Research **October 2017 – April 2019**

- Designed and implemented Python machine learning models using the Model as a Service (MaaS) delivery framework for real-time cloud-hosted integration, utilizing Spark, Python, and SAS for data analysis, and leading trainings on software development best practices for machine learning.

PROMINENT PUBLIC PROJECTS

Travelers Wildfire Detection Model and Wind Detection Model **November 2018 – April 2019 and November 2021 – April 2022**

- Trained a vision model to identify homes affected by wildfires from aerial imagery
- Developed a pipeline to train models on other catastrophe aerial imagery
- Trained a vision model and developed a distilled DINO backbone for identifying wind damage sevity from catastrophe events

DataJunction - Netflix Open-Source Semantic Layer **September 2022 – Present**

- Create a GraphQL API for the semantic layer service.

- Leverage ANTLR to develop a custom and feature-rich AST for parsing and augmenting SparkSQL.
- Develop core application to create and manipulate SQL ASTs based on database metadata.

Apache Iceberg Python Client **January 2022 – September 2022**

- Worked on type system for core of revised python client.
- Assisted with transformation logic in core of revised python client.

EDUCATION

University of Connecticut **September 2016 – June 2017**

- Master of Science in Mathematics
- GPA: 4.16/4.00

Brandeis University **September 2012 – December 2015**

- Bachelor of Arts, magna cum laude, Mathematics with honors
- Minors: Computer Science, Economics
- GPA: 3.72/4.00, Dean's List all semesters

GENERAL EXPERIENCE

Web Development

- Developed numerous static and SPA apps with HTML, CSS (SCSS), JavaScript, React, NodeJS, Express, GraphQL, Apollo, Flask, or FastAPI

Machine Learning and Data Science

- Python, Pandas, Scikit-Learn, PyTorch, XGBoost, SQL, PySpark, SAS

Other

- Building a wide array of open-source software from ray tracers in Nim, Odin and Rust to CUDA and SIMD bindings to LLM token constraining.
- Nim, Odin, Rust, Lua, Docker, PostgreSQL, MongoDB, ElasticSearch, Neo4J (w/ Neo4JGraphQL), Git, GitHub (+ Actions), Shell (Bash + common tools), Make