Joel Rorseth

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EDUCATION	**PhD in Computer Science**	Sep 2021 - (Apr 2025)
	University of Waterloo, Waterloo ON, Canada	GPA: 93%

- Thesis Supervisor: Dr. Lukasz Golab
- Research Focus: Explainable AI for LLMs and IR

Bachelor of Computer Science (Honours), Minor in Mathematics   2015 - 2019
University of Windsor, Windsor ON, Canada   GPA: 90%

- Graduated *with Great Distinction*
- Thesis Supervisor: Dr. Alioune Ngom
- Thesis: A Clustering-Based Approach to Drug Repositioning

PUBLICATIONS

- J. Rorseth, P. Godfrey, L. Golab, D. Srivastava and J. Szlichta, "RAGE Against the Machine: Retrieval-Augmented LLM Explanations," Accepted at 2024 IEEE 40th International Conference on Data Engineering (ICDE).
- J. Rorseth, P. Godfrey, L. Golab, M. Kargar, D. Srivastava and J. Szlichta, "CREDENCE: Counterfactual Explanations for Document Ranking," 2023 IEEE 39th International Conference on Data Engineering (ICDE), Anaheim, CA, USA, 2023, pp. 3631-3634, doi: 10.1109/ICDE55515.2023.00285.

RESEARCH EXPERIENCE

Explainable AI Lab (UWaterloo)   Sep 2021 - Present
Supervisor: Dr. Lukasz Golab

- Designing novel algorithms to explain retrieval-augmented generation in large language models, deducing provenance of answers and analyzing context biases.
- Proposed the first counterfactual explanation formulation for document rankers, and implemented several novel variants for presentation at ICDE 2023.

EcoSim AI Lab (UWindsor)   Jan 2019 - Apr 2019
Supervisor: Dr. Robin Gras

- Developed and documented a highly accurate sentiment classifier for tweets, using TensorFlow and Google's BERT language model.

Bioinformatics Lab (UWindsor)   Jan 2018 - Apr 2019
Supervisor: Dr. Alioune Ngom

- Designed machine learning models to classify breast cancer stage using genetic expression data, and to identify drugs that may be repurposed for treatment.

INDUSTRY EXPERIENCE

Movyl Technologies (Remote)   Oct 2020 - Present
Engineering Manager

- Managing a team of 3 software engineers building analytical tools at all stages of our AI / data pipeline, while driving high-level architecture.
- Researching and implementing state-of-the-art AI models for key problems in shipping logistics, namely route and load optimization.

- Building a suite of analytical webapps for visualization and monitoring of AI / data pipelines and processes (Python, Plotly Dash, FastAPI).

Federal Government of Canada, National Security (Ottawa, ON)
Software Engineer — Jun 2019 - Sep 2021
Software Developer Co-op — May 2018 - Aug 2018

- Led full-stack software development for two critical enterprise software systems, using Java (Spring Boot) and TypeScript (Angular).
- Championed major software architecture decisions, adoption of modern UI / UX standards, and coordination of their development efforts.

EZ Dine Technologies (Remote) — Apr 2019 - Jan 2021
Lead Software Engineer

- Independently designed, developed, and deployed a food ordering service that coordinates restaurant orders, delivery, payment processing and authentication.
- Built four cross-platform mobile applications for App Store deployment, to engage restaurant managers, delivery drivers, administrators, and customers.

Brave Control Solutions (Windsor, ON) — May 2017 - Aug 2017
Software Developer Co-op

- Built a full-stack React webapp allowing engineers to communicate with PLC machines and record diagnostics (NSERC Experience Award project).

TECHNICAL SKILLS

Programming Languages

- Proficient: Python, Java, TypeScript, JavaScript, C++, Swift
- Previous Experience: R, Objective-C, Bash, Scala

Software and Frameworks

- AI: PyTorch, Hugging Face, TensorFlow
- Data: Spark, Hadoop, PostgreSQL, Azure SQL, MongoDB, Cosmos DB
- Frontend: React, Angular, Plotly Dash, React Native, iOS (UIKit, SwiftUI)
- Backend: Spring Boot, Node.js, Express.js, FastAPI

RELEVANT COURSEWORK

Artificial Intelligence Concepts, Foundation Models, Machine Learning / Pattern Recognition, Big Data Analytics, Database Design, Data Infrastructure, Distributed Computing, Information Retrieval, Reinforcement Learning, Explainable AI

CONFERENCES

IEEE International Conference on Data Engineering (ICDE) 2023	Presenter
NG-Conf 2020	Attendee
QCon San Francisco 2019	Attendee
Canadian Undergraduate Computer Science Conference (CUCSC) 2019	Organizer
Apple Worldwide Developers Conference (WWDC) 2018	Attendee
Apple Worldwide Developers Conference (WWDC) 2017	Attendee

AWARDS AND HONOURS

Graduate Research Studentship ($12,000) – UWaterloo	2021 - Present
Domestic Graduate Student Award ($6,000) – UWaterloo	2021 - Present
Honour Roll – UWindsor	2016 - 2019
Apple WWDC Scholarship	2017, 2018
NSERC Experience Award ($4,500)	2017
Dean's Entrance Scholarship ($10,000) – UWindsor	2015