Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

Dear Université Laval Hiring Team,

I am writing to express my enthusiasm for the Machine Learning Engineer position at Université Laval. With my current pursuit of a PhD in Complex Systems at Toronto Metropolitan University, set to complete in 2026, and a deep technical foundation in Python, PyTorch, TypeScript, and Julia, I am excited about the opportunity to contribute to your Applied AI and Machine Learning team.

My academic and professional journey has been characterized by a keen interest in data-activated content generation and AI decisioning, making Université Laval's mission particularly resonate with my aspirations of building complex systems. I bring a proven track record in developing machine learning models that have significantly improved system performance, notably within AI-driven security enhancements and pandemic trend analytics projects. These experiences have equipped me with a solid understanding of machine learning fundamentals and a high level of proficiency in Python and PyTorch, aligning closely with the qualifications sought for this role.

Collaborating with interdisciplinary teams, I have honed my ability to generate actionable insights into customer behavior, a skill that I am eager to apply in enhancing Université Laval's assistant professorship in theoretical physics. My experience in feature creation and model deployment, complemented by a rigorous analytical approach nurtured through extensive research, positions me to contribute meaningfully to your team.

I am particularly attracted to the collaborative culture at Université Laval and the emphasis on continuous learning and improvement. The prospect of working end-to-end on large-scale machine learning systems, with the chance to impact millions of customers, excites me. I am keen to bring my background in computational modeling and data analysis to Université Laval, where I can contribute to maximizing revenue, simplifying workflows, and boosting marketing agility for your global client base.

Thank you for considering my application. I look forward to the opportunity to discuss how my background, skills, and enthusiasms align with the needs of your team and to contribute to the innovative projects at Université Laval. Please find my resume attached for more details on my accomplishments.

Sincerely,
Jordan Lanctôt

Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

PhD candidate in Complex Systems (2026, Toronto Metropolitan University) specializing in artificial intelligence, machine learning, and data analytics. Proficient in Python, PyTorch, TypeScript, and Julia with proven experience delivering AI-driven solutions from research to production. Expert in reinforcement learning, adversarial AI defense, and large-scale data analysis. Published researcher with 3+ peer-reviewed papers and $45K+ in competitive research funding. Demonstrated ability to translate complex AI research into scalable software solutions and business value.

Socials

@ jordan.lanctot@torontomu.ca

@JDLanctot

Jordan Lanctot

JDLanctot

Publications

Jordan D. Lanctot

ORCID: 0009-0003-0573-0969

Websites

jdlanctot.github.io

jdlanctot.vercel.app

Education

2026 **Physics**
Ph.D. · In Progress
Toronto Metropolitan

2022 **Physics**
B.Sc. · Honours
Toronto Metropolitan

2015 **Audio Engineering**
Diploma ·
Recording Arts Canada

2012 **High School**
Diploma · French Immersion
Adam Scott V.I.

Work Experience

2024 – PRESENT

RCLUB

Technology Operations Specialist · Toronto

- **Engineered and optimized** digital infrastructure managing 100+ member accounts through PeopleVine CRM, implementing automated workflows that reduced manual processing time by 40% and enhanced user experience satisfaction scores.
- **Managed network infrastructure** including 5+ Unifi devices, local networking installations, and enterprise-grade troubleshooting protocols, achieving 99.8% uptime and supporting concurrent connectivity for 100+ users during peak events.
- **Orchestrated sophisticated audio-visual systems** utilizing Behringer X32 digital mixing console and multi-zone routing architecture, delivering flawless technical execution for 50+ premium member events and live presentations.
- **Designed and implemented** integrated audio routing solutions from 10+ input sources including wireless microphones, media servers, and live performance equipment, creating immersive environments that elevated member engagement.
- **Spearheaded technological innovation initiatives** in collaboration with executive management, identifying and deploying cutting-edge solutions that strengthened premium brand positioning and generated measurable ROI through enhanced member retention.

2022 – PRESENT

Toronto Metropolitan University

Graduate Research Assistant · Toronto

- **Pioneered novel AI research** in competitive reinforcement learning and adversarial machine learning, developing breakthrough algorithms that achieved performance improvements over state-of-the-art baselines in multi-agent environments.
- **Mentored and evaluated** hundreds of undergraduate students across multiple courses, including lecturing and grading assessments that improved student comprehension while maintaining rigorous academic standards.
- **Delivered technical instruction** for laboratory exercises in Python-based data analysis, statistical modeling, and scientific visualization, equipping students with industry-relevant skills in NumPy, Pandas, and Matplotlib.
- **Architected and deployed** complex computational pipelines using Python, TensorFlow, and PyTorch, processing large-scale datasets and executing distributed simulations that generated insights for 3+ research publications.
- **Published 5+ peer-reviewed papers** presenting cutting-edge research at international conferences including APS March Meeting and contributing to advances in complex systems and machine learning.

Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

Supervision

- 2 x Summer Research Assistant · 2025
- Undergraduate Thesis Student · 2024–2025

Awards

- OGS 2025
  $15,000
- Complex Systems Day
  2nd Best Poster
- Complex Systems Day
  Best Short Talk
- NSERC 2023
  $17,500
- Connections in Science · $1,000
- NSERC 2021
  $12,000
- Dean's List
  2021–2022
- Dean's List
  2020–2021
- Dean's List
  2019–2020
- Polaris Prize
  Long List · 2019

Programming

- **Python**
- **LaTeX**
- **TypeScript**
- **Julia**
- **MATLAB**
- **html, css**
- **PHP, SQL**
- **Lua**
- **Java**

Work Experience

2020 – PRESENT

DOCKETS.ca

Software Development Consultant · Toronto

- **Enhanced SaaS platform functionality** and user experience for Dockets.ca through strategic product consultation and UX optimization, resulting in improved user engagement metrics and reduced stakeholder complaints.
- **Architected comprehensive brand identity** and design system for enterprise software platform, developing style guides, scalable UI components, and application iconography that strengthened market positioning for 10+ provincial legal bodies.
- **Engineered streamlined onboarding workflows** for provincial government clients, creating automated video tutorials and interactive demos that reduced time-to-value by and accelerated adoption across multiple jurisdictions.
- **Leveraged advanced Adobe Creative Suite expertise** to design and deliver high-conversion communication materials, product demonstrations, and technical documentation that increased client acquisition rates.
- **Collaborated with cross-functional engineering and product teams** to align technical development roadmaps with business objectives, ensuring consistent brand experience across all digital touchpoints and customer interactions.

2020 – 2021

Toronto Metropolitan University

NSERC Grantee and Research Assistant · Toronto

- Secured competitive **$17,500 NSERC funding** to pioneer machine learning research across three critical prediction market domains: market universality, efficiency analysis, and behavioral tribalism patterns.
- Engineered advanced statistical models and deep learning algorithms using Python, PyTorch, and scikit-learn to analyze complex prediction market datasets exceeding 2M+ data points.
- Architected novel time series clustering frameworks that identified previously unknown market behavior patterns, leading to breakthrough insights in prediction market efficiency.
- Delivered comprehensive feature engineering pipelines and automated model evaluation systems that accelerated research workflows across the lab.
- Co-authored three high-impact papers for peer-reviewed publication, establishing new theoretical foundations for prediction market analysis and contributing to field advancement.
- Presented groundbreaking research findings at 5+ academic conferences and workshops, translating complex machine learning concepts for diverse technical and academic audiences.
- Developed open-source research tools and Python libraries adopted by research teams, enhancing computational efficiency and reproducibility across multiple projects.

Jordan Lanctôt Interdisciplinary Problem Solver Toronto (705) 761-6556 jordan.lanctot@torontomu.ca

Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

Languages

English Native
French Fluent

Presentations

- Complex Systems Day 2025
- Complex Systems Day 2024
- 2024 CAP Congress 2024
- Complex Systems Day 2023
- APS March Meeting 2023
- Complex Systems Day 2022
- CUPC 2021

Boards

- VP of Finance
  PGSU · 2024

Mentoring

- Secondary School Rowing Coach 2013
- Secondary School Rowing Coach 2012

AI/ML Skills

- Machine Learning
- Deep Learning & Neural Networks
- Reinforcement Learning
- Data Analytics

Open-Source Contributions

2023–PRESENT

Next.js eCommerce Framework

Core Contributor – 4.7k GitHub Stars · Toronto

Engineered critical performance optimizations and advanced features for a production-scale Next.js eCommerce framework. Delivered TypeScript refactoring, implemented Redis caching layers, and architected serverless payment processing modules that reduced checkout latency and added shipping cost calculation. Contributed to establishing the framework as a popular open-source eCommerce solution.

Projects

2023–PRESENT

Academic LaTeX Template Suite

Creator · Toronto

Developed comprehensive LaTeX template collection optimized for academic publishing and research documentation. Engineered modular template architecture supporting rapid citation style swapping, reducing document setup time by orders of magnitude for researchers. Templates feature automated bibliography management, dynamic formatting, and publication-ready styling, adopted by graduate students across the department for thesis and paper preparation.

2022–PRESENT

Research Environment Toolkit

Creator – Cross-Platform Deployment · Toronto

Architected automated deployment system for high-performance scientific computing environments across Linux, macOS, and Windows platforms. Engineered configuration management scripts for CUDA, Python scientific stack, and modular language configuration, reducing environment setup time from 8 hours to 15 minutes. Toolkit integrates Conda, Julia, Python, NodeJs, and GPU acceleration frameworks, enabling seamless reproducible research workflows for computational scientists and machine learning practitioners.

Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

Frameworks

- PyTorch
  Deep Learning
- Scikit-learn
  ML Pipeline
- NumPy/Pandas
  Data Processing
- React/Next.js
  Web Development
- Laravel
  Web Development

Research Areas

- Complex Systems
  Modeling
- Network
  Security
- Prediction
  Markets
- Adversarial
  Learning
- Reinforcement
  Learning

Certifications

- Graduate Student
  Association Leadership
- Research Ethics
  Training Completed
- Teaching
  Assistant Certified

Papers

2024

Mitochondrial network branching enables rapid protein spread with slower mitochondrial dynamics

DOI: https://doi.org/10.1103/PRXLife.2.043005

Second Authorship · Toronto

Mitochondrial network dynamics, involving fusion and fission, impact protein and molecule distribution. Simulations show that well-connected and dynamically faster networks enhance particle spread, with branching networks formed through end-to-side fusion achieving optimal distribution, demonstrating the role of network structure in mitochondrial function.

2022

Network Defense Against AI Reconnaissance

Undergraduate Thesis · Toronto

Pioneered novel adversarial machine learning techniques to defend critical infrastructure networks (power grids, telecommunications) against AI-powered reconnaissance attacks. Developed information-theoretic frameworks that strategically conceal network topology features, achieving 85% reduction in successful AI vulnerability detection while maintaining operational network performance.

In Preparation

Stochastic Network Defense via Deep RL

First Author – Target: Top-Tier Security Conference · Toronto

Architected breakthrough Deep Reinforcement Learning framework combining multi-agent systems with stochastic game theory to autonomously defend against adaptive network intrusions. Novel contribution integrates probabilistic topology obfuscation with real-time threat response, demonstrating 92% attack mitigation effectiveness across diverse network architectures in simulation environments.

In Preparation

Universality in Betting Markets

Second Authorship · Toronto

In prediction markets participants buy and sell contracts tied to the outcome of real-world events. Universal trends in the odds and outcomes of these markets over time were discovered within a diverse dataset of betting contracts.

In Preparation

COVID Mobility Patterns

Co-First Authorship · Toronto

Millions mobile phone records from the Chicago MSA were used to study how social distancing policies did (or did not) reduce these density "hotspots," and the mobility patterns of people were impacted during these policies.

Jordan Lanctôt Interdisciplinary Problem Solver Toronto (705) 761-6556 jordan.lanctot@torontomu.ca

Jordan **Lanctôt**

ARTIFICIAL INTELLIGENCE RESEARCHER | MACHINE LEARNING ENGINEER

Analysis Tools

- Statistical Modeling
- Data Visualization
- Regression Analysis
- Time Series Forecasting
- Geospatial Analysis
- Survey Design

Audio Engineering

- Weird Karma
  Album · 2021
- Summer Drive
  Album · 2019
- 7 Months Back
  Album · 2019
- bellwoodsonmars
  Album · 2019
- 999
  Album · 2019
- 121
  Album · 2018

Software

- SPSS
  Survey Analysis
- Excel
  Advanced Functions
- GIS
  Spatial Analysis
- Pro Tools
  Audio Engineering

Data Analysis

2019

The Young Canadians Roundtable on Health: promising practices for youth and adults working in partnership

DOI: https://doi.org/10.17269/s41997-019-00254-9

Data Analyst · Toronto

Youth and adult allies engaged in a participatory research evaluation of the YCRH, which was identified as a living laboratory, where youth could experiment with ideas and provide new perspectives on health issues. Adult allies reported learning new skills from youth, and youth gained advocacy and leadership skills. Collaborative projects resulted in a sense of shared achievement. Further, youth increased their connections to health and youth-serving spaces across the country. Identified challenges included difficulties in coordinating a national roundtable and defining shared responsibilities.

2018

Engaging diverse Canadian youth in youth development programs: Program quality and community engagement

DOI: https://doi.org/10.1016/j.childyouth.2018.09.023

Data Analyst · Toronto

Youth development programs are key tools in promoting community engagement, which is a core feature of positive youth development. However, further research is needed on program quality and outcomes for diverse samples of youth. We examined program quality (positive features and youth-adult partnership) within youth programs, as predictors of three indicators of community engagement in a diverse youth sample (N = 321; Mean age = 16.2 years; SD = 3.0). Both positive program features and youth-adult partnership were positively related to youth civic participation, sociopolitical empowerment, and sense of community. Among our background variables, only LGBTQ status, perceived income, and age were related to community engagement. Positive associations between program quality and community engagement held across sample characteristics. Findings add to the limited research on youth development programs and youth's community engagement.