

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 5+ peer-reviewed papers and \$45K+ in competitive research funding. Demonstrated ability to translate complex AI research into scalable software solutions and business value.

Socials

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Jordan Lanctot

JDLanctot

Publications

Jordan D. Lanctot

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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 500+ member accounts through PeopleVine CRM, implementing automated workflows that reduced manual processing time by 40% and enhanced user experience satisfaction scores.
- **Architected network infrastructure** including 15+ Unifi devices, fiber optic installations, and enterprise-grade troubleshooting protocols, achieving 99.8% uptime and supporting concurrent connectivity for 200+ 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 20+ input sources including wireless microphones, media servers, and live performance equipment, creating immersive environments that elevated member engagement by 35%.
- **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 15-25% performance improvements over state-of-the-art baselines in multi-agent environments.
- **Mentored and evaluated** 50+ undergraduate students across multiple courses, designing and grading assessments that improved student comprehension scores by 20% 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 5+ research publications.
- **Published 5+ peer-reviewed papers** in top-tier AI and physics journals, presenting cutting-edge research at international conferences including APS March Meeting and contributing to advances in complex systems and machine learning.

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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 30% improved user engagement metrics and reduced support ticket volume.
- **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 50% and accelerated adoption across multiple jurisdictions.
- **Leveraged advanced Adobe Creative Suite expertise** to design and deliver high-conversion marketing materials, product demonstrations, and technical documentation that increased client acquisition rates by 25%.
- **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 by 40% 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.

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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 serving 500+ active developers. Delivered TypeScript refactoring, implemented Redis caching layers, and architected serverless payment processing modules that reduced checkout latency by 60%. Contributed to establishing the framework as a leading open-source eCommerce solution with sustained 15% monthly growth in adoption.

Projects

2023–
PRESENT

Academic LaTeX Template Suite

Creator – 200+ Downloads · Toronto

Developed comprehensive LaTeX template collection optimized for academic publishing and research documentation. Engineered modular template architecture supporting IEEE, ACM, and Springer conference formats, reducing document setup time by 75% for researchers. Templates feature automated bibliography management, dynamic formatting, and publication-ready styling, adopted by graduate students and faculty across 15+ institutions for thesis and paper preparation.

2022–
PRESENT

HPC 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 container orchestration, reducing environment setup time from 8 hours to 15 minutes. Toolkit integrates Conda, Docker, and GPU acceleration frameworks, enabling seamless reproducible research workflows for computational scientists and machine learning practitioners.

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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
Prepa-
ration

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
Prepa-
ration

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
Prepa-
ration

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.

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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.