


# ZACHARY YANG

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## EDUCATION

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**Doctoral of Computer Science**, McGill University

Ongoing

Relevant Courses: Natural Language Understanding with Deep Learning

**Master of Computer Science**, McGill University

Relevant Courses: Network Science, Distributed Systems, Natural Language Processing, Applied Machine Learning

**Honours Bachelor of Computer Science**, University of Toronto

Co-operative Program in Software Engineering Stream | Graduated with High Distinction | Dean's List for all years

## HIGHLIGHTED REFEREED PUBLICATIONS

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**A Simulation System Towards Solving Societal-Scale Manipulation**, M. Puelma Touzel, S. Sarangi, A. Welch, G. Krishnakumar, D. Zhao, Z.Yang, H. Yu, E. Kosak-Hine, T. Gibbs, A. Musulan, C. Thibault, B. Tugce Gurbuz, R. Rabbany, J. Godbout, K. Pelrine. In the proceedings of *SoLaR, SATA and SafeGenAI*

**ToxiSight: Insights Towards Detected Chat Toxicity**, Z.Yang, D. Tullo, R. Rabbany. In the proceedings of *BlackBoxAI @ EMNLP 2024*.

**Web Retrieval Agents for Evidence-based Misinformation Detection**, J. Tian, H. Yu, Y. Orlovskiy, M. Rivera, Z.Yang, J. Godbout, K. Pelrine. In the proceedings of *Conference on Language Modeling, 2024*

**Game On, Hate Off: A Study of Toxicity in Online Multiplayer Environments**, Z.Yang, N. Grenon-Godbou, R. Rabbany. In the proceedings of the *ACM Games: Research and Practice, 2024*

**Towards Detecting Contextual Real-Time Toxicity for In-Game Chat**, Z.Yang, N. Grenon-Godbou, R. Rabbany. In the proceedings of *Findings of the Association for Computational Linguistics: EMNLP 2023*

**Unveiling Identity Biases in Toxicity Detection : A Game-Focused Dataset and Reactivity Analysis Approach**, J. Van Dorpe, Z.Yang, N. Grenon-Godbou, W. Grégoire. In the proceedings of *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP): Industry Track*

**Online Partisan Polarization of COVID-19**, Z.Yang, A. Imouza, K. Pelrine, S. Levy, J. Liu, G. Desrosiers-Brisebois, J. Godbout, A. Blais, R. Rabbany. In the proceedings of *2021 IEEE International Conference on Data Mining Workshops on Social Data Mining in the Post-pandemic Era (ICDMW-SDM) pp.893-901, IEEE 2021*

## REFEREED PUBLICATIONS

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**An Evaluation of Language Models for Hyperpartisan Ideology Detection in Persian Twitter**, S. Omid Shayegan, I. Nejadgholi, K. Pelrine, H. Yu, S. Levy, Z.Yang, J. Godbout, R. Rabbany. In the proceedings of the *2nd Workshop on Resources and Technologies for Indigenous, Endangered and Lesser-resourced Languages in Eurasia (EURALI) @ LREC-COLING, 2024*

**Party Prediction for Twitter**, K. Pelrine, A. Imouza, Z.Yang, G. Desrosiers-Brisebois, S. Levy, J. Tian, C. Amadoro, A. Blais, J. Godbout, R. Rabbany. In the proceedings of *International AAAI Conference on Web and Social Media, 2024*

**When does Continuous Learning for BERT make sense?**, Z.Yang. In the proceedings of *Proceedings of the Canadian Conference on Artificial Intelligence, 2023*

**OPPVIS: Visualizing Online Partisan Polarization of COVID-19**, Z.Yang, A. Imouza, K. Pelrine, S. Levy, J. Liu, G. Desrosiers-Brisebois, J. Godbout, A. Blais, R. Rabbany. In the proceedings of *2021 IEEE Visualization & Visual Analytics (VIS 2021), IEEE, 2021*

## PUBLICATIONS UNDER REVIEW

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**Regional and Temporal Patterns of Partisan Polarization during the COVID-19 Pandemic in the United States and Canada**, Z.Yang, A. Imouza, M. Puelma Touzel, C. Amadoro, G. Desrosiers-Brisebois, K. Pelrine, S. Levy, J. Godbout, R. Rabbany Submitted to *Nature - Scientific Reports, 2024*

## OTHER PUBLICATIONS

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**Misogyny Surfaces as Top Issue in Survey of In-game Experiences**, M. Miller Yoder, E. Young, J. Narisetty, S. Kulikoswki, W. Flanagan, C. Schuler, C. Guo, Z.Yang. White paper published by *Collaboratory Against Hate (CMU)*, 2024

**Open, Closed, or Small Language Models for Text Classification**, Z.Yang, Y. Hao, K. Pelrine, J. Godbout, R. Rabbany. Preprint published on *ArXiv*, 2023

**COVID-19 Partisan Polarization and Toxicity**, Z.Yang, K. Pelrine, A. Imouza, G. Desrosiers-Brisebois, S. Levy, J. Tian, J. Godbout, R. Rabbany. Poster presented at *McGill School of Computer Science 50th Anniversary*, 2022

**Activity Based Party Prediction for Twitter**, K. Pelrine\*, A. Imouza\*, G. Desrosiers-Brisebois\*, S. Levy\*, J. Tian\*, Z. Yang\*, A. Feizi\*, A. Blais, JF. Godbout, R. Rabbany. In the *American Political Science Association Meeting (APSA)*, 2022

**Ebbs and Flows of Polarization During a Political Campaign**, K. Pelrine, A. Imouza, G. Desrosiers-Brisebois, Z.Yang, S. Levy, A. Feizi, J. Liu, A. Blais, J. Godbout, R. Rabbany. In the *American Political Science Association Meeting (APSA)*, 2021

## EXPERIENCE

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### NLP R&D Scientist

Ubisoft La Forge

May 2022 - August, 2023

Montreal, QC

- Spearheaded the advancement of toxicity detection algorithms, resulting in a **significant improvement (+43%)** in the F1-score, and established **industry-leading player content safety systems**
- Pioneered an unsupervised learning project through integrated active learning and human-in-the-loop methodologies, advancing the **trust and safety strategy important to chat moderators**.
- Research on detecting and preventing toxicity within in-game chat using language models, with **two papers in EMNLP 2023** and a **presentation in Ethical Gaming 2024**.

### Graduate Research

Complex Data Lab

Jan 2021 - Present

Montreal, QC

- Developed **scalable** classifiers and tools using machine learning and data mining techniques to measure partisan polarization for **large-scale data (over 80K users and 30M posts)**
- **Collaborated with cross-domain research teams** to correlate this measure with existing COVID-19 epidemiology data and political events to investigate the potential causes and impacts of polarization
- Designed the first text-based measurement of partisan polarization on social media in the context of COVID-19 across time and between states in the United States and Canada, resulting in **one paper in ICDMW**, one presentation at McGill and **one paper in IEEE VIS**.

## OTHER EXPERIENCE

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**DevOps Engineer** (Ministry of Education, *Toronto, ON*)

Jan 2018 - Sep 2020

**IT QA** (Ministry of Education, *Toronto, ON*)

Sep 2016 - Dec 2017

## SKILLS

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### Programming Languages

Python 3, C#, Java

### ML Packages

HuggingFace, PyTorch, Numpy, Pandas, NLTK, Sklearn, Bokeh, Scipy, SpaCy

### DB

Oracle, PostgreSQL, MongoDB, Firebase

### Version Control

Azure, TFS, GitHub, GitLab

### Scripting

PowerShell, Batch, Linux

### Soft Skills

Time Management, Problem-solving, Attention to Detail, Adaptability

## TEACHING ASSISTANT EXPERIENCE

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*Programming Languages and Paradigms* (Sep 2020 - April 2021)

*Algorithms and Data Structures* (Sep 2020 - Dec 2020)