Sharon Ferguson

PhD Student
Mechanical & Industrial Engineering
University of Toronto

Email: sharon.ferguson@mail.utoronto.ca
Phone: +1 647 269 5073
Website, Linkedin, GitHub

EDUCATION

PhD.   **Mechanical and Industrial Engineering**, University of Toronto, Toronto, ON
MASc. 2020-2021. Fast-Track to PhD. 2021-2025.
Advisor: Dr. Alison Olechowski
Relevant Courses: *CSC2515*: Introduction to Machine Learning, *MIE1517*: Deep Learning, *ETH1000*: Ethics of AI in Context, *CSC2552*: Topics in Computational Social Science

BASc.   **Industrial Engineering**, *Honours, 3.84/4.0,* University of Toronto, Toronto, ON, 2020
Minor in Engineering Business
Relevant Courses in Machine Learning and Human Factors
Undergraduate Thesis: *Experiential User-Experience Sessions for Healthy Aging Technology.*
Supervised by Dr. Mark Chignell

PUBLICATIONS

Journal Article Manuscripts

2022   Ferguson, S. A., Cheng, K., Adolphe, L., Van de Zande, G., Wallace, D., and Olechowski, A. Communication patterns in engineering enterprise social networks: an exploratory analysis using short text topic modelling. *Design Science 8* (2022), e18 . View here.

Accepted   Ferguson, S., Lai, K., Chen, J., Faidi, S., Leonardo, K., and Olechowski, A. "Why couldn't we do this more often?": exploring the feasibility of virtual and distributed work in product design engineering. *Accepted at Research in Engineering Design* (2021)

Peer-Reviewed Conference Proceedings

Accepted   Ferguson, S., Mao, K., Magarian, J., Olechowski, A. Advancing a Model of Students' Intentional Persistence in Machine Learning and Artificial Intelligence*. *Accepted to the American Society of Engineering Education annual conference*, 2022.

Works in Progress

Progress   Ferguson, S., Hu, Y., Chignell, M. Choosing Effective Videos for Exergaming Applications. *In preparation for International Journal of Human-Computer Studies*, 2022.

Progress   Ferguson, S., Ozecylan, M., Chiu, K., Alexander, R., Kuzminykh, A. Open for interpretation: Comparing Human and AI explanations of sexism assessment. *In preparation for ACM Conference on Human-Agent Interaction*, 2022.

---

* represents proceedings accompanied by an oral presentation at the conference

Progress   Ferguson, S., Akemi, P., Alexander, R., Kuzminykh, A. A comparative framework of explanation strategies in Human and AI explanations of sexism assessment. *In preparation for ACM CHI Conference on Human Factors in Computing Systems*, 2022.

TALKS

Invited Talks

2022   University of Toronto Centre For Ethics: Ethics of AI Emerging Scholars Series: "Advancing a Model of Students' Intentional Persistence in Machine Learning and Artificial Intelligence" presenter, March 2022.

Conference Presentations Without Proceedings

2021   S. Ferguson, A. Olechowski, ""Why couldn't we do this more often?": exploring the feasibility of virtual and distributed work in product design engineering" ASME IDETC Conference, Lightning Talk, 2021.

2021   S. Ferguson, A. Olechowski, " Exploring Short Text Topic Models in the Context of Product Design Enterprise Social Network Messaging" University of Toronto Engineering Research Conference, Oral Presentation, 2021. **Awarded First Place in Data Analytics, AI, and Robotics section**

2020   S. Ferguson, A. Olechowski, "Towards the Future of Work from Home via Interviews with Engineering Designers" McMaster Engineering Technology Research and Innovation Conference, 2020.

2020   S. Ferguson, S. Dusciuc, M. Vella, Y. Sivaparamanantha, M-C. Tsai, T. Chan, "Jump Detection and Metric Extraction using Machine Learning: A Case Study in Snowboarding" SPort INnovation (SPIN) Summit, 2020.

AFFILIATIONS

Fellow   **Schwartz Reisman Institute for Technology and Society** University of Toronto, 2022-2023
Project: *Understanding and Mitigating Inequality in Enterprise Social Networks*

RA   **COoKIE Research Group** Led by Anastasia Kuzminykh, Faculty of Information, University of Toronto, 2021-2022
Project: *Examining Explanation Strategies of Humans and AI*

Fellow   **Ethics of AI Graduate Research Fellowship** University of Toronto, 2021-2022
Graduate Research Fellowship at the University of Toronto, Centre for Ethics
Project: *Examining Diversity and Intentional Persistence in Machine Learning and Artificial Intelligence*
Responsibilities: Moderated presentations for the Ethics of AI in Context speaker series

Fellow   **Toronto Human-AI Interaction Research School**, University of Toronto, 2021
Research school held by the University of Toronto Faculty of Information.
Project: *Detecting Sexism in Text: Humans vs. Machines*
Advisors: Dr. Anastasia Kuzminykh and Dr. Rohan Alexander

GRANTS AND AWARDS

Grants and Scholarships

2022   University of Toronto School of Graduate Studies Conference Grant ($540)

2022	NSERC Canada Graduate Scholarship - Doctoral ($105,000)
2022	Schwartz Reisman Institute for Technology and Society Graduate Fellowship ($7,500)
2021	Queen Elizabeth II Graduate Scholarship in Science and Technology ($15,000)
2021	Ontario Graduate Scholarship ($15,000) *Declined*
2021	Ethics of AI Graduate Research Fellowship ($2500)
2021	Toronto Human-AI Interaction Research School Fellow ($500)
2020	University of Toronto Global COVID-19 Student Engagement Grant ($3000)
2020	NSERC Undergraduate Research Award ($4800)
2015	University of Toronto Admissions Scholarship ($3000)
2015	University of Toronto Scholar ($6000)

Awards and Honors

2021	Selected as University of Toronto nominee for Vanier Canada Graduate Scholarship
2021	Best Oral Presentation in Data Analytics, AI, and Robotics Stream at the University of Toronto Engineering Research Conference ($500)
2020	2nd Place Capstone Award - Industrial Engineering class of 2020 ($600)
2018	1st Place - Healthy Aging Technology Hackathon

TEACHING EXPERIENCE

University of Toronto

2022	**Head Teaching Assistant** MIE459: Organization Design Designed assignments and rubrics, led tutorials, and assisted in the creation of exam materials. **Nominated for Teaching Assistant Award.**
2021	**Guest Lecturer** TEP1502: Leadership in Product Design
2021	**Lab Instructor** MIE262: Operations Research 1 Taught synchronous lab sessions using Excel, AMPL, Gurobi and Java to solve linear programs. Advised students throughout the completion of the course project. **Nominated for Teaching Assistant Award.**
2020/21	**Teaching Assistant** MIE242: Psychology for Engineers Prepared lectures to transition course to an online format. Created and led a workshop for 130 students about effectively reading academic papers, in collaboration with the Engineering Communication Program. **Nominated for Teaching Assistant Award.**

PROFESSIONAL EXPERIENCE

2018/19	**Power System Data Analyst** *Independent Electricity System Operator*. Published the 20-year electricity demand forecast to 50+ stakeholder groups, informing 3000 MW of investments. Implemented an automated pipeline to gather generator data from 10+ sources into a relational database used by 8 teams. Designed data-visualization queries in Tableau to automatically update charts used in quarterly publications.

SERVICE

Outreach Activities

2021/22   **Vice President Finance** Graduate Society of Women Engineers, University of Toronto. Responsible for managing and budgeting club funds, applying for external funding opportunities, and organizing events. Tripled club finding from previous year.

2021   **Workshop Co-Lead** Camp Ooch Teen Conference Skill Building Workshops. Led a coding workshop to introduce Python to 14-18 year olds.

2020   **Panel Moderator** 'Female Leaders and the Changing Landscape of Engineering' with the Ontario Society of Professional Engineers

2018   **High School Mentor** Women in Science and Engineering

Peer-Reviewing

2022   Reviewer for ACM Conference on Computer-Supported Cooperative Work and Social Computing

SKILLS

Computing Languages: Python, R, Java, SQL, MATLAB

Python Packages: scikit-learn, Matplotlib, NumPy, SciPy, NLTK, SpaCy, Gensim, Jupyter

Other Computing: Git, LaTeX

Academic Professional Development Courses: Becoming a Better Editor of Your Work, Writing NSERC Proposals, Oral Presentation Skills, University of Toronto Unconscious Bias Education Modules, Canada Research Chair Unconscious Bias Training Module, Department for Women and Gender Equality's Introduction to Gender-Based Analysis+, Workshop for Qualitative Analysis in Human-Computer Interaction

RESEARCH INTERESTS

Computational Social Science, Human-Computer Interaction, Natural Language Processing, Gender and Diversity, Machine Learning, Explainable Artificial Intelligence, Engineering Design

Updated June 2022