Shera Potka

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Professional Summary

Researcher in Responsible AI, focusing on **fairness in recommender systems**, **bias in large language models**, and **privacy in NLP**. My work combines algorithm design with social impact, producing **award-winning publications** at leading conferences. As an **instructor**, I have designed and taught both **graduate and undergraduate courses** and mentored large cohorts of computer science students. I aim to advance inclusive, accountable AI while training the next generation of researchers and practitioners.

Core Competences

- Expertise in Data Mining, Machine Learning, and large-scale Data Analysis
- Strong teaching and mentoring abilities in advanced data-analytics methods
- Proven ability to conduct and publish high-impact research
- Skilled in applying data-driven approaches to solve complex problems

Education

- **PhD in Computer Science**, University of Victoria (May 2023 – May 2025)
  Thesis: "Three Ethical Dimensions of AI: Fairness in Social Recommenders, Bias in LLMs, and Privacy in NLP"
  Focus: Responsible AI, Fairness in Recommendation, Bias Auditing, Privacy-Preserving NLP
- **Master's in Media and Computer Science**, University of Cologne (Aug 2021 – Apr 2023)
  Thesis in AI, machine learning, and computational linguistics
- **Bachelor's in Media and Computer Science**, University of Cologne (Jun 2019 – Aug 2021)
  Thesis on graph-based text analysis for social media
- **Advanced Training:** Data Mining, Systems for Massive Datasets, Data Privacy, Foundations of Disease Analytics

Academic Appointments & Teaching

Instructor, Data Models and Algorithms, University of Victoria — Jan 2025 – Apr 2025, Sep 2026 – Dec 2026

- Designed and taught a core graduate course (≈ 50 students), emphasizing active learning and algorithmic problem-solving.
- Developed comprehensive teaching materials (slides, detailed notes, and supplementary resources) aligned with current research in data management.
- Mentored students on course projects, guiding them in applying data models and algorithmic analysis to real-world datasets.
- Re-offered the course in Fall 2026 with revised pedagogy and updated materials, incorporating feedback from the first cohort.

Lead Teaching Assistant, Data Mining, University of Victoria — Spring 2024 – Present

- Coordinated teaching support across three academic terms (Spring, Summer, Fall), with class sizes ranging from 50 to 180 students.
- Designed and delivered lab sessions to reinforce core methods in classification, clustering, and pattern mining.
- Provided individualized support through office hours, assignment feedback, and project guidance, contributing to improved student performance.

Lead Teaching Assistant, Web Design, University of Victoria Spring 2024

- Guided ≈ 120 students through web technologies (HTML, CSS, JavaScript), with an emphasis on usability and accessibility.
- Provided detailed project feedback and mentoring, enabling students to deliver functional and well-structured websites.

Researcher, Cologne Center for eHumanities (CCeH), University of Cologne Nov 2022 – Nov 2023

- Designed and implemented computational workflows for large-scale text and metadata analysis, advancing methods in digital humanities.
- Conducted applied research within *Project RACIR*, developing novel tools to support higher education studies and cross-disciplinary scholarship.
- Collaborated with humanities and computer science researchers to translate domain questions into data-driven experiments.
- Prepared scholarly deliverables, including research reports, software prototypes, and dissemination materials for academic audiences.
- **Link:** CCeH Profile

Research Fellow, Electronic Textual Cultures Lab (ETCL), University of Victoria Oct 2022 – Mar 2023

- Developed interactive data visualizations and computational tools to advance digital humanities scholarship and open knowledge dissemination.
- Collaborated with interdisciplinary teams to design research workflows and integrate digital methods into humanities inquiry.
- Authored scholarly outputs, including presentations, abstracts, and conceptual frameworks for higher education and digital research.
- Led the *HSS Commons* initiative, contributing both technical development and intellectual design for a platform supporting open, collaborative research.
- **Link:** ETCL Profile

Publications

Community Structure and Coherence in Digital Humanities Works IISA 2023
(*Best Paper Award*)

Shera Potka, Alex Thomo

IISA 2023 (14th International Conference on Information, Intelligence, Systems & Applications): 1-8

TLDR: Analyzed a decade of Digital Humanities publications, revealing community structure and cohesion using text similarity networks.

Enhancing Structural Minority Visibility in Link Recommendations MEDES 2024
(*Best Paper Award*)
Shera Potka, Isla Li, Jason Kepler, Alex Thomo

MEDES 2024 (16th International Conference on Management of Digital EcoSystems)

TLDR: Introduced MinWalk, an algorithm to improve visibility of minority groups in social networks, balancing fairness and reducing popularity bias.

Word Embedding Bias in Large Language Models I-SPAN 2025

Poomrapee Chuthamsatid, **Shera Potka**, Alex Thomo

I-SPAN 2025 (17th International Symposium on Pervasive Systems, Algorithms, and Networks)

TLDR: Examined gender and race bias in modern large language models, expanding beyond previous research with new insights using SC-WEAT tests and clustering techniques.

Gender and Race Bias in Consumer Product Recommendations by Large Language Models AINA-2025

Ke Xu, **Shera Potka**, Alex Thomo

AINA-2025 (39th International Conference on Advanced Information Networking and Applications)

TLDR: Investigated biases in consumer product recommendations, focusing on gender and race bias. Analyzed implications for fairness and diversity in AI-driven recommendation systems.

CluSanT: Differentially Private and Semantically Coherent Text Sanitization NAACL 2025

Ahmed Musa Awon, Yun Lu, **Shera Potka**, Alex Thomo

NAACL 2025 (Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics)

TLDR: Introduced CluSanT, a novel framework for text sanitization using Metric Local Differential Privacy (MLDP), balancing privacy and semantic coherence through clustering and embedding techniques.

Technical Expertise

Extensive experience with **Python** and its scientific ecosystem (PyTorch, scikit-learn, NumPy, Pandas) for data mining, bias analysis, and privacy-preserving NLP.

Proficient in **databases and large-scale systems**, including PostgreSQL, MySQL, and ElasticSearch, applied to recommender systems and network analysis.

Skilled in **web and platform development** (React, Node.js, WordPress) for building interactive applications and research dissemination tools.

Competent in **knowledge representation and reproducibility**, using Protégé for ontology design, LaTeX for scholarly writing, and Docker/Git for collaborative development.

References

Prof. Alex Thomo, University of Victoria, Computer Science, BC, Canada, thomo@uvic.ca

Prof. Venkatesh Srinivasan, Santa Clara University, Mathematics and Computer Science, CA, USA, vsrinivasan4@scu.edu

Prof. Yun Lu, University of Victoria, Computer Science, BC, Canada, yunlu@uvic.ca