

Yasas Senarath Wijesuriya

Ph.D.

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Fairfax, VA

Research Interests

Neuro-symbolic AI, Knowledge-guided Continual Learning, Human-Centered AI, Streaming Data Analytics

Education

George Mason University
Fairfax, VA

School of Computing
PhD in Information Technology
Thesis: *Modeling Evolving Human Behavior in Online Data Streams via Knowledge-Guided Continual Learning*
Advisor: Dr. Hemant Purohit
May 2026

George Mason University
Fairfax, VA

School of Computing
Master of Science (Applied Information Technology)
Concentration: Cyber-Human Systems (CBHS)
Advisor: Dr. Hemant Purohit
Aug 2022

University of Moratuwa
Sri Lanka

Department of Computer Science and Engineering
Master of Science (Research-based)
Thesis: *Affect Level Opinion Mining of Twitter Streams*
Advisor: Dr. Uthayasanker Thayasivam
Jun 2019

University of Moratuwa
Sri Lanka

Department of Computer Science and Engineering
Bachelor of Science in Engineering (Honours)
Advisor: Dr. Surangika Ranathunga
GPA: 3.95/4.20
Jan 2018

Research Experience

Humanitarian Informatics Lab
George Mason University
Aug 2019 – Aug 2025

Designed methods and tools for real-time analytics of human behavior from social media data related to natural hazards and societal crises to inform decision support systems in government agencies.

Center for Climate Change Communication
George Mason University
Jun 2021 – Aug 2021

Analyzed the effectiveness of educational events related to Climate Change Communication by modeling the divergence in the communication behavior of participants using their social media content posted over time.

DataSEARCH
University of Moratuwa
Jan 2018 – Jul 2019

Researched methods for fine-grained emotion detection in Tweets using transfer learning.

Professional Experience

Graduate Teaching Assistant
Information Sciences and Technology
George Mason University, US
Aug 2025 – May 2026

Graduate teaching assistant for classes Database Fundamentals, Data Analytics in Social Media, and Introduction to Research in Applied IT

Visiting Instructor
Computer Science and Engineering
University of Moratuwa, LK
Jan 2018 – Jul 2019

Visiting instructor for subjects in Data Science, Advanced Algorithms, and Data Structures

Trainee Software Engineer
CodeGen International (PVT) Ltd.
Jul 2016 – Dec 2016

Opinion and Entity Extraction from reviews related to tourist attractions

Peer-Reviewed Publications

Continual Learning

- [1] **Senarath, Yasas** and Hemant Purohit. “KGCL: Knowledge-guided Continual Learning for Detecting Evolving Human Behaviors in Online Communities”. In: *Information Processing & Management* (2026). Under Review.
- [2] **Senarath, Yasas** and Hemant Purohit. “Evaluating Class-Incremental Learning Methods for Robust Subjective Text Analytics Systems”. In: *Neural Computing and Applications* (2025). Under Review.
- [3] **Senarath, Yasas** and Hemant Purohit. “Knowledge-guided Continual Learning for Behavioral Analytics Systems”. In: *The 7th IEEE International Conference on Cognitive Machine Intelligence (CogMI)*. 2025.
- [4] **Senarath, Yasas** and Hemant Purohit. “Lifelong Learning Framework for Multilingual Hate Speech Detection in Social Media Streams”. In: *Proceedings of the 17th International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS)*. 2024.

Emergency Incident Detection

- [5] **Senarath, Yasas**, Ayan Mukhopadhyay, Hemant Purohit, and Abhishek Dubey. “Designing a Human-Centered AI Tool for Proactive Incident Detection Using Crowdsourced Data Sources to Support Emergency Response”. In: *Digital Government: Research and Practice* 5.1 (2024), pp. 1–19.
- [6] **Senarath, Yasas** et al. “Practitioner-Centric Approach for Early Incident Detection Using Crowdsourced Data for Emergency Services”. In: *2021 IEEE International Conference on Data Mining (ICDM)*. IEEE. 2021, pp. 1318–1323.
- [7] **Senarath, Yasas**, Saideep Nannapaneni, Hemant Purohit, and Abhishek Dubey. “Emergency Incident Detection from Crowdsourced Waze Data Using Bayesian Information Fusion”. In: *2020 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)*. IEEE. 2020, pp. 187–194.

Streaming Data Modeling

- [8] **Senarath, Yasas**, Amanda Borth, Edward Maibach, and Hemant Purohit. “EVO-LYZER: Social Media Mining System for Evolving Communication Behavior Analytics to Aid Climate Change Programs”. In: *Workshop: NOCAPS 2024 - Networks and Opinions on Climate Action in the Public Sphere (NOCAPS)*. 2024.
- [9] **Senarath, Yasas**, Hemant Purohit, and Rajendra Akerkar. “Violence-Inducing Behavior Prevention in Social-Cyber Space”. In: *International Symposium on AI, Data and Digitalization*. Springer Nature Switzerland Cham. 2023, pp. 151–159.
- [10] **Senarath, Yasas**, Antonios Anastasopoulos, Tonya Thornton, and Hemant Purohit. “PROBER: A System for Real-time Propaganda Behavior Analytics on Social Media and Web Data Streams”. In: *2022 IEEE International Conference on Big Data (Big Data)*. IEEE. 2022, pp. 4812–4815.
- [11] **Senarath, Yasas**, Jennifer Chan, Hemant Purohit, and Ozlem Uzuner. “Evaluating the Relevance of UMLS Knowledge Base for Public Health Informatics during Disasters”. In: *ISCRAM 2021 Conference Proceedings — 18th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*. 2021.
- [12] **Senarath, Yasas** and Hemant Purohit. “Evaluating Semantic Feature Representations to Efficiently Detect Hate Intent on Social Media”. In: *2020 IEEE 14th International Conference on Semantic Computing (ICSC)*. IEEE. 2020, pp. 199–202.
- [13] Hossein Salemi, **Senarath, Yasas**, and Hemant Purohit. “A Comparative Study of Pre-trained Language Models to Filter Informative Code-mixed Data on Social Media during Disasters”. In: *ISCRAM 2023 Conference Proceedings — 20th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*. 2023.
- [14] Hossein Salemi, **Senarath, Yasas**, Tarin Sultana Sharika, Anuridhi Gupta, and Hemant Purohit. “Summarizing Social Media & News Streams for Crisis-related Events by Integrated Content-Graph Analysis: TREC-2023 CrisisFACTS Track”. In: *The Thirty-Second Text REtrieval Conference Proceedings (TREC)*. 2023, pp. 14–17.
- [15] Fedor Vitiugin, **Senarath, Yasas**, and Hemant Purohit. “Efficient Detection of Multilingual Hate Speech by Using Interactive Attention Network with Minimal Human Feedback”. In: *Proceedings of the 13th ACM Web Science Conference (WebSci)*. 2021, pp. 130–138.

Human-AI Collaboration

- [16] **Senarath, Yasas**, Rahul Pandey, Steve Peterson, and Hemant Purohit. "Citizen-Helper System for Human-Centered AI Use in Disaster Management". In: *International Handbook of Disaster Research*. Springer Nature Singapore Singapore, 2023, pp. 477–497.
- [17] Zinat Ara et al. "Closing the Knowledge Gap in Designing Data Annotation Interfaces for AI-Powered Disaster Management Analytic Systems". In: *Proceedings of the 29th International Conference on Intelligent User Interfaces*. 2024, pp. 405–418.
- [18] A Hughes et al. "Human-AI Teaming for COVID-19 Response: A Practice & Research Collaboration Case Study". In: *ISCRAM 2022 Conference Proceedings — 19th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*. 2022.
- [19] Keri Stephens et al. "Online-Computer-Mediated Interviews and Observations: Overcoming Challenges and Establishing Best Practices in a Human-Ai Teaming Context". In: *Proceedings of the 54th Hawaii International Conference on System Sciences (HICSS)*. 2021.

Opinion Mining

- [20] **Senarath, Yasas**, Nadheesh Jihan, and Surangika Ranathunga. "A Hybrid Approach for Aspect Extraction from Customer Reviews". In: *The International Journal on Advances in ICT for Emerging Regions (ICTer)* 12.1 (2019).
- [21] **Senarath, Yasas** and Uthayasanker Thayasivam. "DataSEARCH at IEST 2018: Multiple Word Embedding Based Models for Implicit Emotion Classification of Tweets with Deep Learning". In: *Proceedings of the 9th Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis (WASSA)*. 2018, pp. 211–216.
- [22] Rajenthiran Jenarathanan, **Senarath, Yasas**, and Uthayasanker Thayasivam. "ACTSEA: Annotated Corpus for Tamil & Sinhala Emotion Analysis". In: *2019 Moratuwa Engineering Research Conference (MERCon)*. IEEE. 2019, pp. 49–53.
- [23] Nadheesh Jihan, **Senarath, Yasas**, and Surangika Ranathunga. "Aspect Extraction from Customer Reviews Using Convolutional Neural Networks". In: *2018 18th International Conference on Advances in Ict for Emerging Regions (ICTer)*. IEEE. 2018, pp. 215–220.
- [24] Nadheesh Jihan, **Senarath, Yasas**, Dulanjaya Tennekoon, Mithila Wickramarathne, and Surangika Ranathunga. "Multi-domain Aspect Extraction using Support Vector Machines". In: *Proceedings of the 29th Conference on Computational Linguistics and Speech Processing (ROCLING)*. 2017, pp. 308–322.

Community Resilience

- [25] **Senarath, Yasas**, Steve Peterson, Hemant Purohit, Amanda L Hughes, and Keri K Stephens. "Mining Risk Behaviors from Social Media for Pandemic Crisis Preparedness and Response". In: *Proceedings of the 2021 International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS)*. 2021.
- [26] Dante Della Vella et al. "Eliciting Socio-Technical Research Needs on Countering Violence-Inducing and Hateful Speech in Cyberspace". In: *Digital Society* 4.2 (2025), p. 62.
- [27] Hoang Long Nguyen, **Senarath, Yasas**, Hemant Purohit, and Rajendra Akerkar. "Towards a Design of Resilience Data Repository for Community Resilience". In: *ISCRAM 2021 Conference Proceedings — 18th International Conference on Information Systems for Crisis Response and Management (ISCRAM)*. 2021, pp. 271–281.

Teaching

Database Fundamentals (Teaching Assistant)	Fall 2025, Spring 2026
Conducted hands-on sessions, conducted office hours, evaluated student assignments	
Introduction to Research in Applied IT (Teaching Assistant)	Spring 2026
Conducted office hours, evaluated student assignments	
Data Analytics in Social Media (Teaching Assistant)	Fall 2025
Developed and conducted hands-on sessions, conducted office hours, evaluated student assignments	

Hosted Tutorials

Continual Learning for Online Behavioral Analytics: A Tutorial Los Angeles, CA, USA
International AAAI Conference on Web and Social Media (ICWSM), Tutorial (Accepted) 2026

Selected Talks

Human-centered AI Use in Disaster Management using Crowdsourced Data Castelo Branco, Portugal
4th Workshop on Social Networks and Artificial Intelligence for Disaster Risk Management 2025

Infrastructure Risk Forecasting using Citizen Sensing & Physical Sensing Data Streams for AI-empowered Disaster Response Frascati, Italy (Hybrid)
The International Telecommunication Union (ITU) 2025

Early Warning System for Transport Risk Detection Fairfax, VA, USA
Institute for a Sustainable Earth (ISE) Summer Grad Fellows Professional Development Series
George Mason University 2025

Detecting Evolving Violence-Inducing Behaviors in the Social-Cyber Space through Continual Learning Fairfax, VA, USA
Information Sciences and Technology (IST) PhD Symposium
George Mason University 2025

Violence-inducing Behaviour Prevention in Social-Cyber Space Sogndal, Norway
International Symposium on AI, Data and Digitalization (SAIDD) 2023

Mentorship

Gayatri Ramchandra Vaidya (Ph.D. Student) 2026

Anuridhi Gupta (Ph.D. Student) 2025

Rajenthiran Jenarathanan (Undergraduate Student) 2019

Funding Proposal Development

Provost Doctoral Research Scholarship 2024-25
Awarded by George Mason University
Conceptualizing and developing the research proposal

SCC-IRG: Resilient Sheltering Decision Support for Emergency Evacuations using Explainable AI 2025
Funded by the National Science Foundation (NSF)
Developing technical approach and assisting in its description

Violence-Inducing Behaviour Prevention in Social-Cyber Space of Local Communities (SOCYTI) 2023-24
Funded by the Research Council of Norway (RCN)
Developing technical approach and assisting in its description

Systems Development

CitizenHelper [16]
A system for human-centered AI use in disaster management.

CitizenHelper-CERT [18, 25]
A Human-AI teaming system that harnessed volunteer feedback loops to continuously improve COVID-19 risk detection from real-time data streams.

CROMEx [7, 6, 5]
An a practitioner-first visualization dashboard that puts human judgment at the center of AI model selection for real-world emergency deployment.

SOCYTI [9, 26]
A browser-based dashboard for analyzing and visualizing real-time user-generated data for understanding public discourse relating to deviant behavior.

CrisisFACTS

[14]

A system for summarizing social media and news streams for crisis-related events by integrated content-graph.

Service

Reviewer

Information Processing & Management (IPM)	2026
AAAI Conference on AI Ethics and Society (AIES)	2023–2025
International Conference on Advances in Social Networks Analysis and Mining (ASONAM)	2020–2022
ACM International Conference on Information and Knowledge Management (CIKM)	2022
ACM Conference on Computer Supported Cooperative Work (CSCW)	2024
International AAAI Conference on Web and Social Media (ICWSM)	2021,2023–2026
ACM Conference on Human-AI Complementarity and Alignment (HCOMP)	2022–2023
ACM Web Conference (WWW)	2021–2023,2026
IEEE Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (IEEE TPS)	2024
ACM Web Science Conference (WebSci)	2020,2024
International Symposium on AI, Data, and Digitalization (SAIDD)	2020,2023
International Workshop on Cyber Social Threats (CySoc)	2020,2022,2024

Editorial Assistance

AAAI Fall Symposium on AI for Social Good (AI4SG)	2020
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Honors and Awards

Doctoral Research Scholarship	2024
Awarded by George Mason University for research in Knowledge-Guided Continual Learning.	
Unbounded by Dell Technologies Hackathon	2021
Secured 1st runner-up for CoviSave, a COVID-19 safety application, at the Dell EMC Unbounded Hackathon.	
CINTEC Award	2018
Recognized for the highest graded final year project at the Department of Computer Science and Engineering, University of Moratuwa.	
Gold Award for Most Outstanding Digital Communication Project	2018
Honored by Rotaract District 3220 Sri Lanka & Maldives for the community initiative TrainLK.	

Skills

Technical Skills	Python, PyTorch, TensorFlow, FastAPI, Flask, NumPy, GeoPandas, Pandas, Scikit-learn, SpaCy, Gensim, NLTK, BeautifulSoup, Tableau, Git, Docker, CI/CD, Data Visualization, Matplotlib, Seaborn, Plotly, Leaflet, Folium, JavaScript + HTML + CSS, SQL, Shell / Bash, Bootstrap, jQuery, React, LLMs (fine-tuning, prompt engineering, agentic systems)
Research Skills	A/B Testing, Statistical Analysis, Usability Testing, Qualitative Coding, Survey Design
Soft Skills	Communication, Teamwork, Problem Solving, Critical Thinking, Adaptability, Time Management, Leadership, Creativity