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 One Health Modelling Network for Emerging Infections | Réseau une seule santé sur la modélisation des infections

2025 Super Spreader Seminar Series

Featured Speaker:

Dr. Gelan Ayana

Provost's Fellow of the Artificial Intelligence and Mathematical Modeling Lab (AIMM Lab) at the Dalla Lana School of Public Health in the department of Public Sciences, University of Toronto

Seminar #28

Community-based approach to One Health: AI for community-based early detection of zoonotic diseases

ABSTRACT: The growing threat of zoonotic diseases necessitates the need for a proactive, integrated approach to surveillance and early detection. A Community-based One Health (CBOH) approach, combining human, animal, and environmental health perspectives, offers a promising framework to tackle these challenges at the local level. Leveraging artificial intelligence (AI) for early detection can empower communities with the tools to identify, monitor, and respond to zoonotic outbreaks more effectively. This talk explores the potential of AI in enhancing community-driven surveillance systems by integrating real-time data from various sources. Moreover, AI-based mobile applications and platforms can enable local communities to report symptoms, track human and animal health, and monitor environmental conditions, bridging gaps in traditional surveillance systems. The talk also discusses the challenges and opportunities of deploying AI in resource-limited settings, including data privacy concerns, access to technology, and community trust. Ultimately, Gelan will demonstrate that AI-enhanced CBOH systems can deliver early disease warnings, mitigate the impact of zoonotic diseases, and strengthen the resilience of communities, fostering a more proactive and health-conscious approach to public health.

Moderated by:

Dr. Jude Kong

Executive Director: Africa-Canada AI & Data Innovation Consortium; Artificial Intelligence & Math Modelling lab (AIMM lab), DLSPH-U of T; Global South AI4PEP | Expert in AI, data science, Math Modelling & Math Education

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JAN. 30

10:30-11:30 EST

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Hybrid Seminar - Zoom & In Person

York University, Keele Campus

Petrie Science & Engineering Building, Room 018, 140 Campus Walk



Dr. Gelan Ayana is working on developing AI tools for community-based disease surveillance in low-resource settings. Prior to that, he was a Research Associate in the department of Medical IT Convergence Engineering at Kumoh National Institute of Technology, a position he assumed shortly after completing his doctoral studies in Medical IT Convergence Engineering from the same institution in the Republic of Korea in 2023. Dr. Ayana earned his Bachelor of Science and Master of Science in Biomedical Engineering with high honors from Jimma University in 2015 and 2018, respectively. Dr. Ayana's research interests encompass AI for health, health informatics, community health, one-health, disease modeling, disease surveillance, public health data governance and policy, digital health, global health, and health disparity research. He utilizes mathematical and computational tools for an in-depth analysis of public health data and the development of innovative solutions for healthcare challenges to informing policy. He is a co-founder and director of AI4PEP Ethiopia known for delivering AI-powered digital health tools for government use in Ethiopia. Dr. Ayana has received numerous awards and honors for his scientific and academic excellence, including a recognition as a Rising Star Scientist by the Bill and Melinda Gates Foundation, the Outstanding Academic Achievement Award from Korean Ministry of Education, and the American Association for Cancer Research (AACR)-Sanofi Scholar-in-Training Award. Furthermore, Gelan drives impactful research, as evidenced by his success in securing grants such as the Grand Challenges Ethiopia Health Innovation Seed Grant, the Dutch Organization for Internationalization in Education (Nuffic) CINOP Global Grant, and the Canadian International Development Research Centre (IDRC) and Foreign, the UK's Commonwealth & Development Office (FCDO) under the auspicious of the Global South AI for pandemic and epidemic preparedness network (AI4PEP). Gelan is a highly engaged professional in the fields of AI for health, health informatics, and global health. With a strong academic background, he actively participates in mentoring graduate students and international fellows. His affiliations and activities span a wide range of roles, including mentoring emerging leaders in AI, serving as a judge for the AI for global health innovation challenges, and contributing to multiple steering committees, such as those focused on AI for global health and pandemic preparedness. He holds memberships in several prestigious organizations, including the IEEE, EMBS, Canadian Center for Diseases Modeling (CCDM), Black in AI, and the African Society for Laboratory Medicine, and is involved in international research and technical advisory roles, notably with the AI4PEP, AIGH and Family Guidance Association Ethiopia. Gelan also contributes as a guest editor and session chair for major conferences and as an expert reviewer for Grand Challenges Africa.

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