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OMNI-REUNIS Super-Spreader Seminar Series

These seminar series is intended to provide faculty members, OMNI-RÉUNIS affiliates and HQPs a platform to present their research, share experiences and foster collaboration among OMNI-RÉUNIS, the Emerging Infectious Disease Modelling (EIDM) networks, and the scientific community.

DEVELOPING A SURVEILLANCE STRATEGY AND EARLY WARNING SYSTEM FOR AVIAN INFLUENZA OUTBREAKS

Hybrid Seminar (Zoom) Petri Sci. & Engr Building, Room 018, 140 Campus Walk

Thursday, Nov 28, 2024

10:30 am-11:30 am EDT

REGISTER HERE

DR. ZAHRA MOVAHEDI NIA

MEET THE PRESENTER

Dr. Zahra Movahedi Nia is a research associate at York University and a data scientist at AI4PEP Global south, specializing in machine learning, data analytics, and Natural Language Processing (NLP). Holding a Ph.D in computer engineering, Zahra has spent three years as a postdoctoral researcher under the supervision of Prof. Jude Kong, where they have developed a novel early warning system for respiratory infections through web-based data sources. Zahra's primary research program is centered on the integration of Artificial Intelligence (AI) and data science to enhance decision-making processes in clinical public health. Through the development of advanced machine learning models and data mining methods, she aims to address complex health challenges by providing data-driven insights and predictive tools that inform healthcare policies and interventions. Outside of academia, Zahra is invested in the development of Large Language Models (LLMs) with the potential to offer anonymous medical consultation support to individuals, broadening access to reliable health information while maintaining privacy. She is deeply devoted to bridging the gap between cutting-edge AI technologies and practical healthcare solutions, aiming to create tools that empower both individuals and healthcare providers.

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SEMINAR TITLE AND ABSTRACT

DEVELOPING A SURVEILLANCE STRATEGY AND EARLY WARNING SYSTEM FOR AVIAN INFLUENZA OUTBREAKS

Since November 2021, Canada has faced repeated outbreaks of H5N1 avian influenza in both wild and domestic bird populations, leading to significant health concerns, societal distress, and economic losses for poultry and bird farming sectors. Effective surveillance systems are crucial for rapid response, economic mitigation, and overall preparedness. However, traditional surveillance methods—such as collecting samples from soil, water, air, cages, and feeding areas in domestic and peri-domestic environments—are often time-consuming and costly. In this work, a novel surveillance strategy and Early Warning System (EWS) has been developed that leveraging modern web-based sources to monitor and forecast avian influenza outbreaks more efficiently. Weather and air quality data as well as number of news articles, social media posts, and Google searches have significant correlation with the number of avian influenza cases. Using deep-learning models such as Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU), this framework integrates diverse data sources to predict outbreaks at both national and regional scales. This innovative approach is designed to assist agriculture and food inspection agencies, poultry farmers, and health officials by enabling proactive interventions and reducing the risk of cross-species virus transmission, including potential spillovers to humans and other mammals.

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