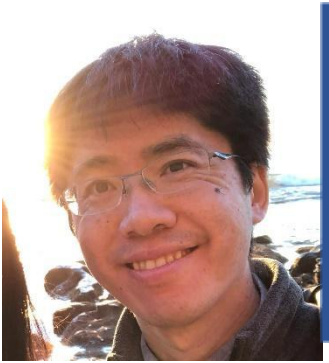


Speaker



Wenjun (Randy) LIN

Assistant Professor at the School of Computer Science and Technology, Algoma University
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Biography

Randy Lin is currently an Assistant Professor in Computer Science at Algoma University, Brampton, ON. He earned his PhD in Biomedical Engineering from the University of Saskatchewan, where his research focused on improving healthcare information integration and decision support, emphasizing ontology, sustainability, and resilience. Over the years, Dr. Lin has been involved in various research projects, including the development of a healthcare data dashboard, digital twin-based emergency department visit reduction programs, and the application of digital twins in manufacturing. His research interests span big data in public health, adaptive user interfaces, and health system resilience.

Title: Optimizing Healthcare Resource Allocation through Digital Twins: A Multi-objective Approach for Efficiency, Equity, and Resilience

Abstract:

Leveraging digital twins, this study presents an innovative approach to healthcare resource allocation, emphasizing efficiency, equity, and resilience. Traditional methods often centralize resources, disadvantaging rural areas. Our model, rooted in digital twin principles, addresses this by optimizing patient accessibility to services. Validated through a case study on COVID-19 test site allocation in Saskatchewan, Canada, our approach can reduce testing disruptions by up to 92% if a site becomes inoperative. Beyond testing, the model aids in allocating critical healthcare resources, such as ICU beds and medications. While focused on healthcare, the methodology offers broader resource allocation implications, marking a pioneering step in combining equity and resilience.

