

## CIUSSS West Central Montreal partners with the National Research Council of Canada to develop machine learning tools to enhance COVID-19 care

**Montreal, February 12, 2021** – Under the umbrella of OROT - The Connected Health Innovation Hub for the CIUSSS West Central Montreal and the Jewish General Hospital, the Digital Health Team at the CIUSSS - CCOMTL is partnering with the National Research Council of Canada (NRC) to fund an initiative to develop and assess an explainable machine learning (ML) prototype tool that improves transparency and the applicability of the decisions that it helps to make. The outcome will be to introduce ML to clinical informatics and enhance confidence in its accuracy.

“During the COVID-19 pandemic, clinicians were provided with a deluge of models to address forecasting, contact tracing, screening and patient care. Many algorithms show tremendous promise for assisting with our response to COVID-19, but further work is required to optimize their application as effective clinical tools,” explained Dr. Michael Shulha, Associate to the Director of Digital Health for the CIUSSS-CCOMTL. “With this project, our objective is to improve the association between machine learning and its implementation in clinical interfaces within our institution. Accordingly, these cutting-edge tools will gain wider acceptance and have a more meaningful impact on clinical decision-making while ensuring consistency in clinical practice.”

In the first wave of the COVID-19 pandemic, health care institutions were faced with the challenge of rapidly adapting care systems and services to cope with the surge of patients. While tremendous efforts were made to adapt facilities, care protocols, care modalities, and infection protocols, the capacity to quickly implement ML tools aimed at patient care was limited. Much of this challenge is related to the lack of a comprehensive framework for implementing explainable artificial intelligence within the Jewish General Hospital. The science of machine learning explainability is still in its infancy, as is the link between explainability methods and new design paradigms for user experience in clinical interfaces.

Within the scope of this project, a prototype machine learning tool will be designed with input from clinicians who have spent significant time on the front lines caring for COVID patients in the wards and the intensive care unit of the Jewish General Hospital. In other words, this is an opportunity for artificial intelligence and actual clinical practice based on nearly a year of experience in dealing with the pandemic to learn from each other.

The first phase of the project will seek to answer:

1. What are the most potentially relevant machine learning algorithms that could be implemented to aid in the continuing response to COVID-19?
2. What explainability methods would be most appropriate to apply to these algorithms?
3. What is the state of the art in representing explainable machine learning in user interfaces?
4. What is the most appropriate scientific methodology for studying end user acceptability of explainable machine learning tools?

At the end of this first phase, the CIUSSS Digital Health Team will present the results to clinicians who were heavily involved in the first COVID-19 wave. These clinicians will help to identify the most clinically relevant algorithms for use in the on-going COVID-19 response.

“This project is intended to advance both the science of explainable machine learning and to inform the larger body of work on the application of explainability methods, and user experience design to the space of clinical informatics,” explained Dr. Shulha, an investigator at the Lady Davis Institute at the Jewish General Hospital and member of the Information Technology Primary Care Research Group at McGill University’s Department of Family Medicine. “Subsequent phases of research will produce a practical tool prototype.”

This project is receiving funding from the [NRC's Pandemic Response Challenge program](#).

OROT is a Connected Health Innovation Hub that brings together clinicians and end users with entrepreneurs and innovators in order to build and launch technologies that improve people’s lives. For more information, please visit <https://orot-jgh.org/>

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