AI could help doctors make the best use of ICU beds during the COVID-19 pandemic

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Based on lessons learned from that known data, the neural network developed by researchers can predict the need for ICU admission in new COVID cases with greater than 95-per-cent accuracy. It also identifies the key factors that drive its predictions to help give clinicians confidence in them.

Rather than replacing doctors, the technology is meant to arm them with a new tool to make faster, more informed decisions and ensure the patients most in need of intensive care receive it.

"The goal is to help clinicians make faster, more consistent decisions based on past patient cases and outcomes," said Wong, a director of the Vision and Image Processing (VIP) Lab at Waterloo. "It's all about augmenting their expertise to optimize the use of medical resources and individualize patient care."

Researchers have made the technology freely available so engineers and scientists around the world can work to help improve it.

They are now incorporating it into a larger clinical decision support system, developed in their ongoing COVID-Net open-source initiative, that also helps doctors detect COVID and determine its severity using AI analysis of medical images.

Wong collaborated on the ICU admission work with DarwinAI researchers Audrey Chung and Mahmoud Famouri and Andrew Hryniowski, an engineering Ph.D. student in the VIP Lab.

A paper on the research, COVID-Net Clinical ICU: Enhanced Prediction of ICU Admission for COVID-19 Patients via Explainability and Trust Quantification, is scheduled for presentation on December 10 during a workshop at the 2021 Conference on Neural Information Processing Systems, the largest AI conference in the world.
arxiv.org/abs/2109.06711

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