# Human-Machine Interaction

COVID-19 INITIATIVES

DR. LEE MAKOWSKI has started work with the University of Ghana focusing on medical facilities in Ghana as they begin to treat patients in respiratory distress with inexpensive tools and lightly trained staff. He has visited healthcare facilities in Ghana on two trips, most recently at the beginning of March. For devices to be used effectively there, they need to be simple to use, as well as deployable in settings with minimal logistical support. Working with two recent PhD students, Dr. Makowski is producing prototypes of a new respiratory assist device, with a goal of reducing needed ICU use (as Ghana cannot widely provide ICUs) by 25 percent.

Dr. Makowski is also working on another device for patients with more severe forms of the disease, and has been training several hospitals in methods to reconfigure their current ventilators, allowing them to serve two patients instead of one. The Korle Bu Teaching Hospital in Accra has already begun making those adjustments, with the head of their Department of Anesthesia preparing to test five prototype devices that Dr. Makowski's lab has recently shipped.

DR. JESSICA OAKES is partnering with the Bill and Melinda Gates Research Institute to model airflow in instruments designed to provide non-invasive delivery of dry-powder aerosol surfactant for treatment of respiratory distress syndrome in pre-term infants.
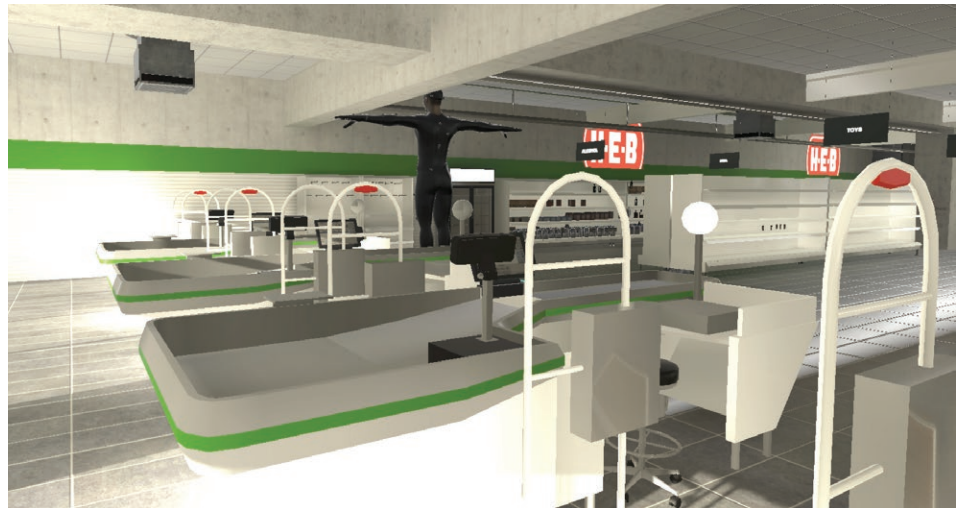
DR. RYAN WANG has been developing virtual reality models to train non-medical essential personnel such as grocery store workers and warehouse workers. The VR environment (pictured) helps them learn how to safely practice social distancing and disinfection techniques, alerting them using vibration and other sensory feedback if they get too close to someone or miss an area needing disinfection.

DR. TASKIN PADIR is exploring how workers and robots interact and the greater importance of robots for the future of work in the era of social distancing. Dr. Padir is a national innovator in how robots can contribute to combating infectious disease, beginning with his involvements with research during the Ebola outbreak that began in 2014. He has significant knowledge to contribute to how to mitigate worker risk, particularly that of healthcare workers.

Dr. Wang has been developing virtual reality models to train non-medical essential personnel such as grocery store workers and warehouse workers.