Hologram patients developed to help train doctors and nurses

June 29 2022

From left to right: Junior doctor Aniket Bharadwaj with trainers Dr Ruby Woodard and Dr Jonny Martin, diagnosing a hologram patient. Credit: University of Cambridge

A new partnership involving Cambridge University Hospitals (CUH) and the University's Faculty of Education, brings medical training using "mixed reality" technology one step closer. The project aims to make consistent, high-level and relevant clinical training more accessible

across the world.

HoloScenarios, a new training application based on life-like holographic patient scenarios, is being developed by Cambridge University Hospitals NHS Foundation Trust (CUH), in partnership with the University of Cambridge and Los Angeles-based tech company GigXR. The first module focuses on common respiratory conditions and emergencies.

"Mixed reality is increasingly recognized as a useful method of simulator training," said Dr. Arun Gupta, consultant anesthetist at CUH and director of postgraduate education at Cambridge University Health Partnership, who is leading the project.

"As institutions scale procurement, the demand for platforms that offer utility and ease of mixed reality learning management is rapidly expanding," he said.

Learners in the same room, wearing Microsoft HoloLens mixed-reality headsets, are able to see each other in real life, while also interacting with a multi-layered, medically accurate holographic patient. This creates a unique environment to learn and practice vital, real-time decision making and treatment choices.

Through the same type of headset, medical instructors are also able to change patient responses, introduce complications and record observations and discussions—whether in person in a teaching group or remotely to multiple locations worldwide, via the internet.

Learners can also watch, contribute to and assess the holographic patient scenarios from Android, iOS smartphone or tablet. This means true-to-life, safe-to-fail immersive learning can be accessed, delivered and shared across the world, with the technology now available for license to learning institutions everywhere.

Alongside the development and release of HoloScenarios, an analysis of the new technology as a teaching and learning resource is being led by Professor Riikka Hofmann at Cambridge's Faculty of Education.

"Our research is aimed at uncovering how such simulations can best support learning and accelerate the adoption of effective mixed reality training while informing ongoing development," said Hofmann.

"We hope that it will help guide institutions in implementing mixed reality into their curricula, in the same way institutions evaluate conventional resources, such as textbooks, manikins, models or computer software, and, ultimately, improve patient outcomes."

Junior doctor Aniket Bharadwaj is one of the first to try out the new technology. "Throughout medical school we would have situations where actors would come in an act as patients. With the pandemic a lot of that changed to tablet based interactions because of the risk to people of the virus," he said.

"Having a hologram patient you can see, hear and interact with is really exciting and will really make a difference to student learning."

The first module features a hologram patient with asthma, followed by anaphylaxis, pulmonary embolism and pneumonia. Further modules in cardiology and neurology are in development.

Delivered by the Gig Immersive Learning Platform, HoloScenarios aims to centralize and streamline access and management of mixed reality learning, and encapsulate the medical experience of world-leading doctors at CUH and across the University of Cambridge.

The new technology could also provide more flexible, cost-effective training without heavy resource demands of traditional simulation, which

can make immersive training financially prohibitive. This includes costs for maintaining simulation centers, their equipment and the faculty and staff hours to operate the labs and hire and train patient actors.

More information: For more information on the Gig Immersive Learning Platform, see www.gigxr.com .

Provided by University of Cambridge