UCF | **Institute for Simulation and Training**

UNIVERSITY OF CENTRAL FLORIDA

Blockchain for COVID and Breast Cancer Imaging

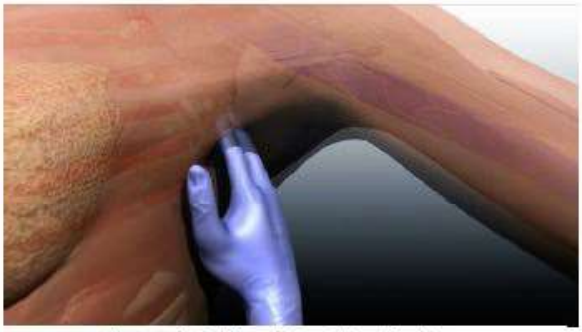
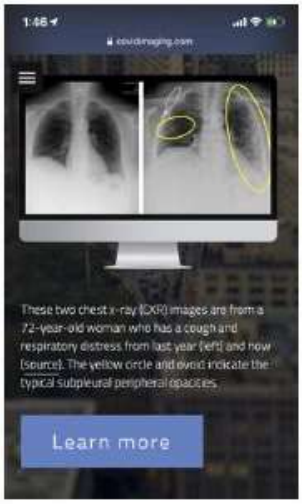


Figure 1. Axillary Exam Visualization

At the University of Central Florida's Institute for Simulation & Training (UCF IST), advanced imaging and visualization have been a longtime research interest from our early days in helping to develop 3D visualizations of screening techniques for UCF's startup College of Medicine (COM) to more recent efforts assisting Dr. Dexter Hadley with his National Institute of Health (NIH) funded mission of producing AI-based pattern matching and blockchain verification on the privacy and dissemination of both COVID and breast cancer medical imaging. Recently, our team was awarded an Army Research Office (ARO) grant to establish the first Blockchain and Quantum Defense Simulator, which we believe will augment these areas of research.



Using the blockchain simulator capabilities to lower the cost of implementing blockchain solutions by leveraging the existing equipment, expertise, and know-how will create further efficiencies as a research and development test platform for a wide variety of experiments. These include tracking and record validation for imagery and breast cancer screening data. Specifically, we propose to provide an Ethereum-based blockchain for de-identified, HIPAA-conforming record verification, and pointers to the secured medical imaging. Putting the metadata on- chain provides verification without reducing performance of access to the medical data, electronic health record (EHR), or clinical data systems.

During the R&D phase of analysis and development, having a multi-test net environment with the Blockchain and Quantum Defense Simulator gives further opportunities to leverage blockchain capabilities for medical research. "Blockchain can improve science and accelerate medical research while bringing a new layer of trust to healthcare." – Dr. Sean Manion, *Blockchain for Medical Research.*

Figure 2. Blockchain and Quantum Defense Simulator (rendering)

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