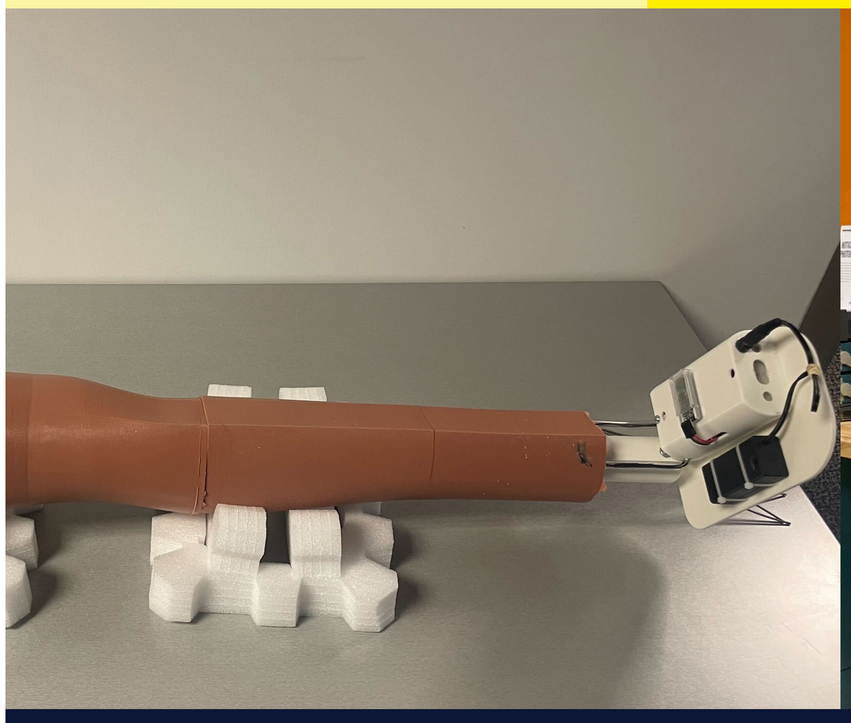

INTERACTIVE TRAINING TOOL FOR INJURY ASSESSMENT OF A HUMAN JOINT

Department:
Systems Design Engineering

Program:
PhD

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Project co-researchers:
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HAPTIC EXPERIENCE LAB

seed funding
THE GAMES INSTITUTE

MARCO A. MORAN-LEDESMA

When someone injures a joint or ligament in their leg, the only way to properly diagnose the damage is through scans and medical imaging, but what if an accurate diagnosis could be performed right when the injury happened through a hands-on assessment? Moran-Ledesma has dedicated his PhD research to exploring this question with the goal of helping health care practitioners design easy to use and easy to access training equipment. This has become the basis of his 3D printed artificial human joint.

Mimicking a human leg, the artificial joint has been constructed using a wide variety of different 3D printed materials with the goal of making this tool easy to fabricate, assemble, and implement as a teaching device for clinical instructors and kinesiology students. Using silicone-based skin layers and internal wires to simulate an injured or torn ligament, the materials mimic the texture, feel, and density of an injured joint which would improve the hands-on training kinesiology students need when making assessments.

An additional component to the training and implementation of the artificial joint is to incorporate virtual reality (VR) for more immersive training simulations. The use of VR would have students perform an assessment on the artificial joint that is collocated with a virtual avatar in a clinical setting. The result of this hybrid training simulation will better educate students about injury assessment.

Interesting fact: As of 2023, Moran-Ledesma is on version 5.0 of the leg to make it “Doctor Proof” accounting for how often the leg breaks under rigorous testing in medical environments.

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