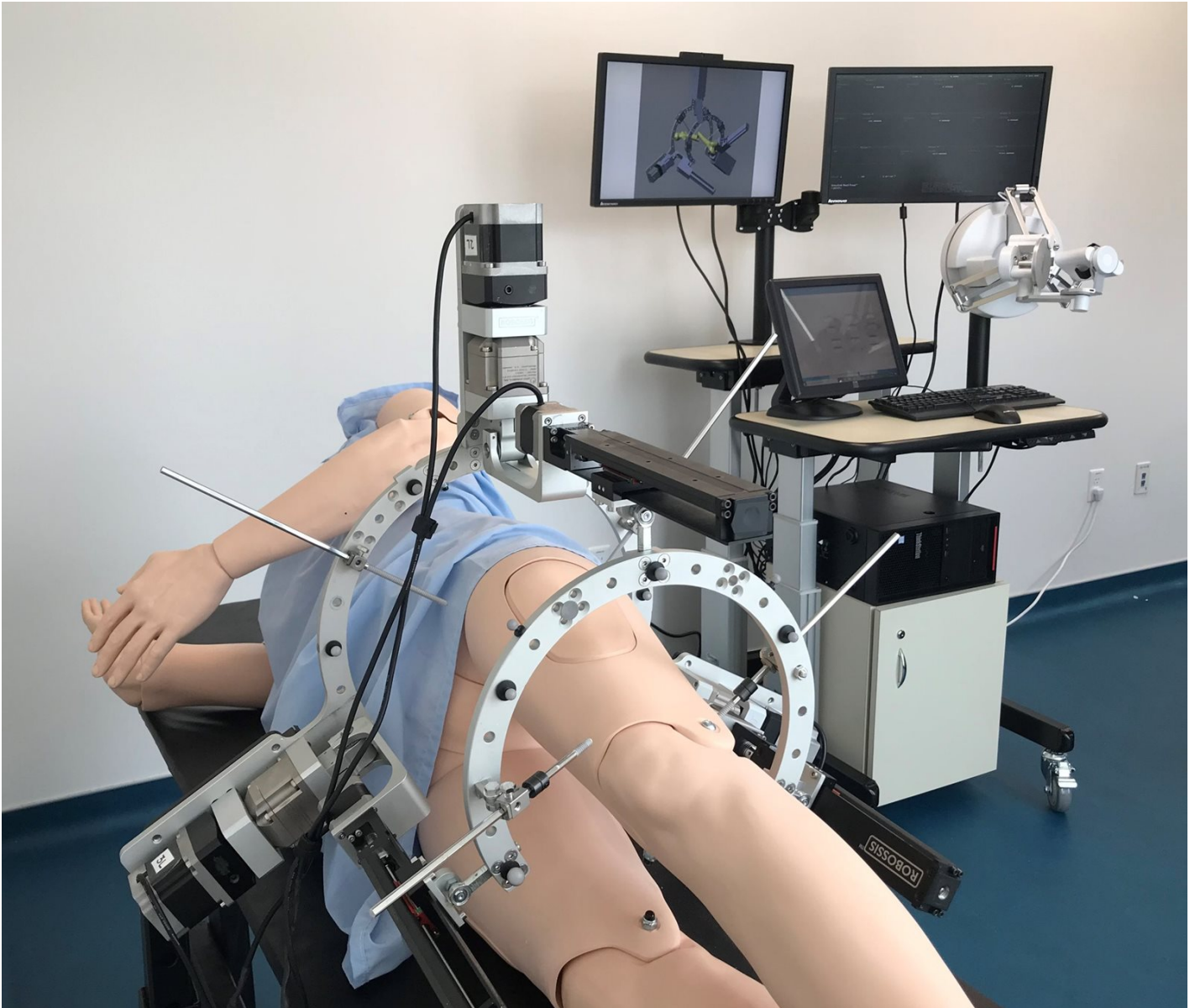


Robossis: Intelligent Surgical Robotic System For Long-Bone Fracture Alignment



More than half of all fractures occur in long bones, including the femur. Current surgeries for them are manual, and a major limitation with current protocols is the manual realignment, which presents difficulties due to the bone's elongated anatomy and the strength of the surrounding counteracting muscles. Malalignment is serious complication with long-bone fractures, with a malalignment of 15° or more after femur fracture fixation occurring in 28% of patients.

To overcome the above challenges Dr. Mohammad H. Abedin-Nasab, an Assistant Professor and Director of Surgical Robotics Lab at Rowan University in New Jersey has developed Robossis, an intelligent surgical robotic system for long-bone fracture alignment, which improves alignment by 90%. Unlike traditional femur fracture surgeries, Robossis enables the surgeon to accurately apply large traction forces, precisely align the fractured bone, and significantly

reduce radiation exposure. The robot has a unique architecture with two wide-open rings. This facilitates positioning the leg inside the robot and provides a large workspace for surgical maneuvers. Using its own imaging technology, Robossis drives the bone fragments into correct alignment and holds them in position for the duration of the surgery.

The Office of Technology Commercialization (OTC) at Rowan University, and Dr. Yatin Karpe, OTC Director, helped Robossis file four US and EU patent applications. Two key US patents were issued in 2020 and 2021, and two others are pending. A Patent License Agreement between Rowan University and Robossis was signed in 2021, a significant achievement for both parties to bring the technology closer to commercialization. Thanks to OTC supports, Robossis has secured external funding from National Science Foundation I-CORPS program, Science Center QED program, and New Jersey Health Foundation. Robossis has recently performed its first successful cadaver testing, and two leading medical device companies have already shown their great interest in this technology.

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