Research, Informatics and Graduate Studies

PhD/Master (MSc) Positions in virtual reality based surgical simulations (GS-2022002) – Group of Assoc. Prof. Zhujiang Wang

Description
The Mechanical Engineering and Robotics Program (group of Zhujiang Wang) is looking for 1 PhD and 1 Master students to conduct research projects in patient-specific surgical simulations.

Project Details
Surgical simulation is attractive because it provides a safe and standardized method for training in surgery, allows learners to practice at any time without the limitations in conventional apprenticeship model learning, and can offer measurable improvement in skills. Research is increasingly showing that surgical simulations improve learning and have the potential to meet the needs of trainees and satisfy the regulatory needs of the profession and society. Modern advances in technology are revolutionizing surgical simulations and the recent innovations are focused on improving surgical outcomes using rapid prototyping technologies, virtual reality (VR) and augmented reality (AR) applications, and patient-specific surgical simulations, etc. As patient-specific surgical simulators allow surgeons to plan and practice surgical interventions before conducting surgeries and thus can improve patient outcomes dramatically, researchers have devoted great efforts in recent decades and developed various biomechanical models based on finite element methods and meshfree methods to simulate surgeries accurately. In our group, we focus on developing VR based patient-specific surgical simulations.

Keywords
Surgical simulation; computer graphics; real-time simulation; mesh generation; point cloud generation; meshless method; numerical simulation; Lagrangian mechanics; parallel computing; GPU computing

Selection Criteria
This is an interdisciplinary project in computational solid mechanics and computer graphics. The candidates are expected to have the following skills / experience / interests.

- Master / Bachelor degree in Mechanical Engineering, Computer Science, Physics, Mathematics, or equivalent (essential)
- Strong programming skills and experience in C/C++/C# (essential)
- Strong interest / experience in parallel computing, GPU programming (essential)
- Strong interest in real-time simulations (essential)
- Strong interest / experience in virtual reality (essential)
- Strong willing to take courses in computer graphics and computational solid mechanics (essential)
- Good communication skills, good command of English (essential)
- Ability to work independently as well as in an interdisciplinary team environment (essential)
- Ability to author scientific reports and co-author scientific publications (essential)
- The PhD candidate must fulfill the requirements for admission to the Technion Graduate School and needs to comply with its regulations leading to the PhD/Master degree: https://graduate.technion.ac.il/en/prospective-

Position
PhD/Master

Program
Mechanical Engineering (Robotics)

Contact
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Web Page Link

Application Deadline
Open till filled

Date posted
January 24, 2022

Location
Guangdong Technion – Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Israel.

Fees & Finance

How to Apply

Application

Send required documents electronically to: zhujiang.wang@gtiit.edu.cn *with the subject of "Application for the PhD/Master position 2022"*