

Web-Based Medical Simulation Using WebGL

Woojin Ahn, Tansel Halic, Suvranu De

(ahnw, halict, des@rpi.edu)

Center for Modeling, Simulation and Imaging in Medicine

Rensselaer Polytechnic Institute



SIGGRAPH2011



Rensselaer

Medical Simulation

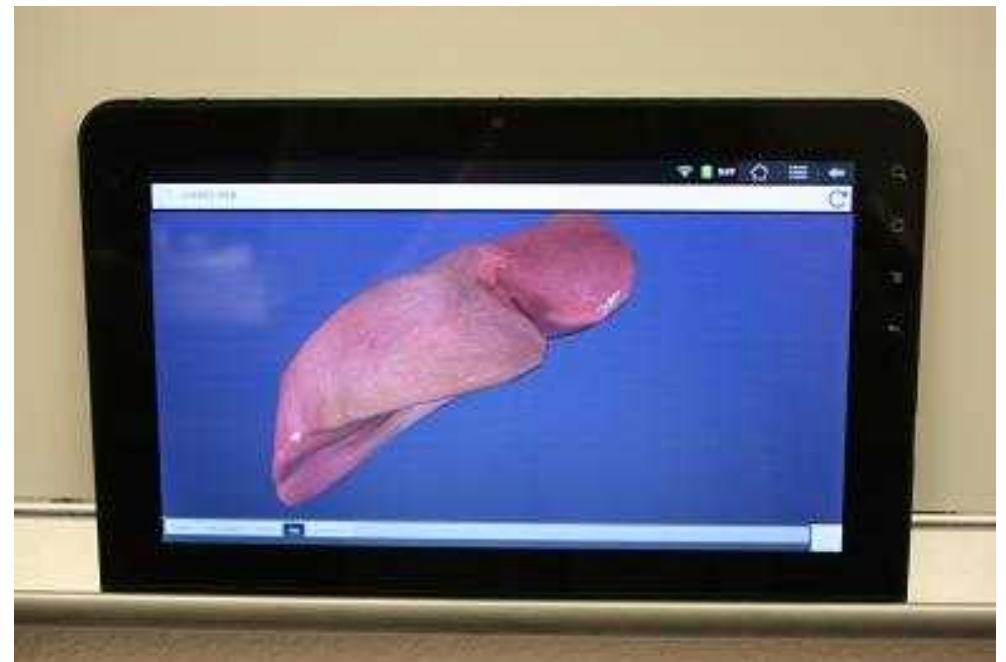
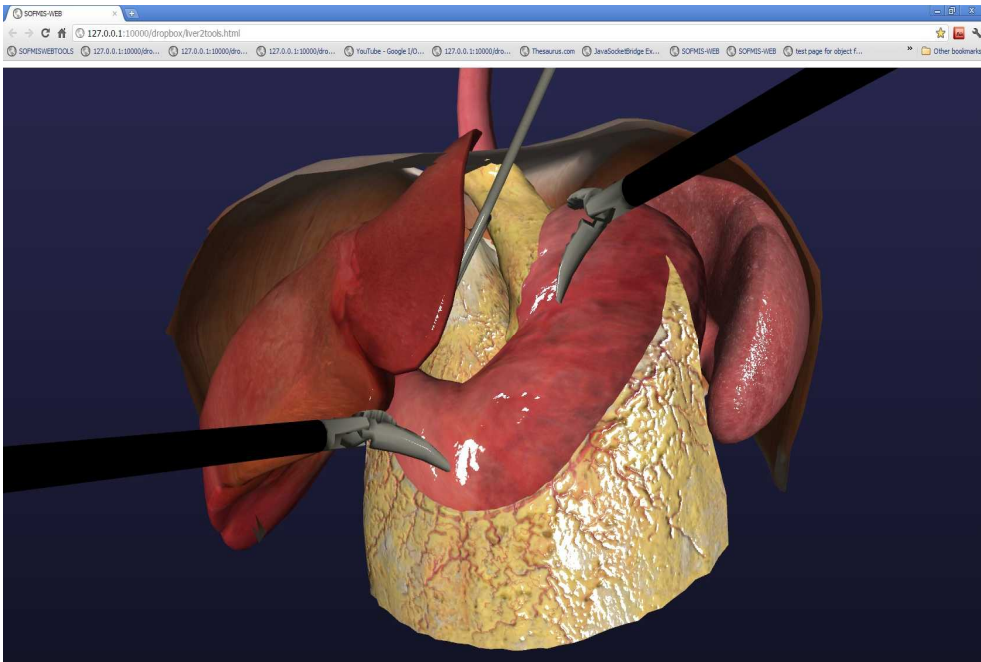
- Requirements
 - Visualization
 - Tool-tissue interaction
 - Hardware interface



Rensselaer

Web-Based Medical Simulation

- Accessibility, Portability, Platform Independence



Rensselaer

Web-Based Medical Simulation

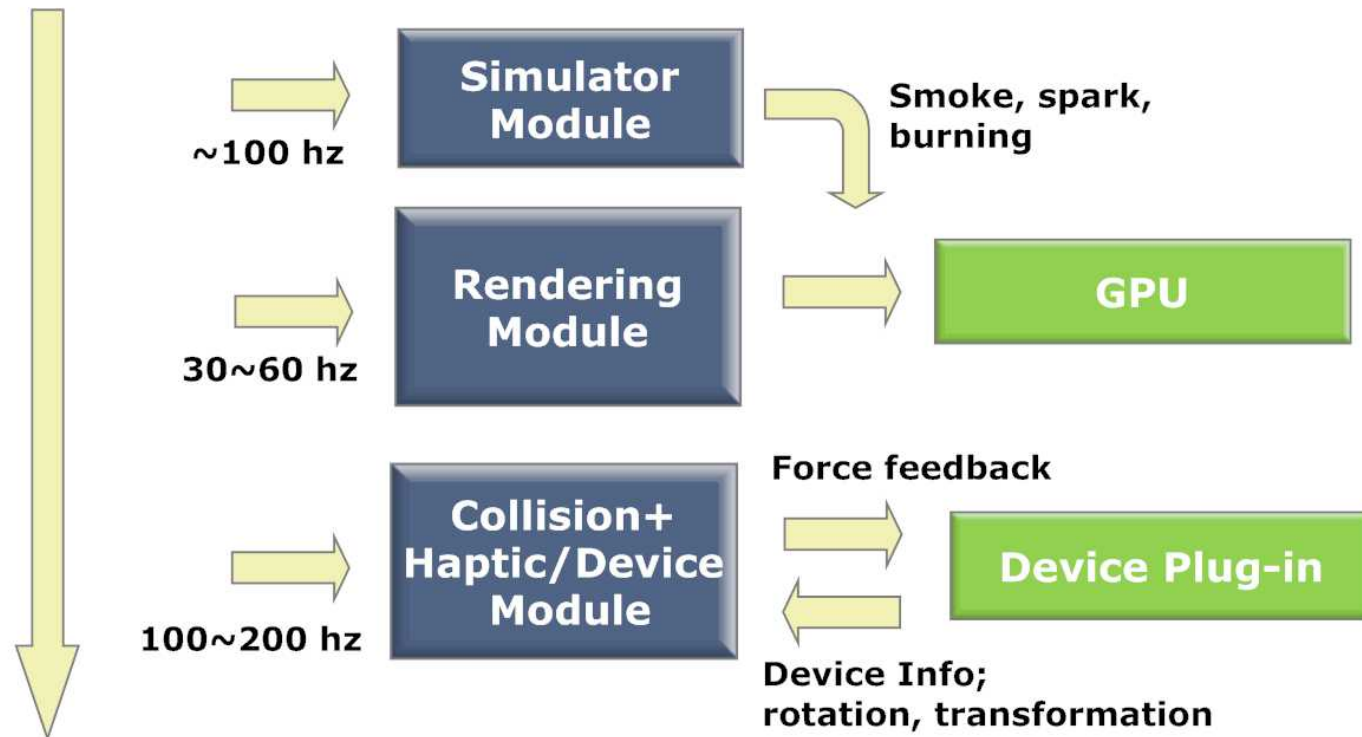
- Tools
 - Visualization : **WebGL**
 - Tool-tissue interaction : **JavaScript**
 - Hardware interface : **Plug-in**



Framework Architecture

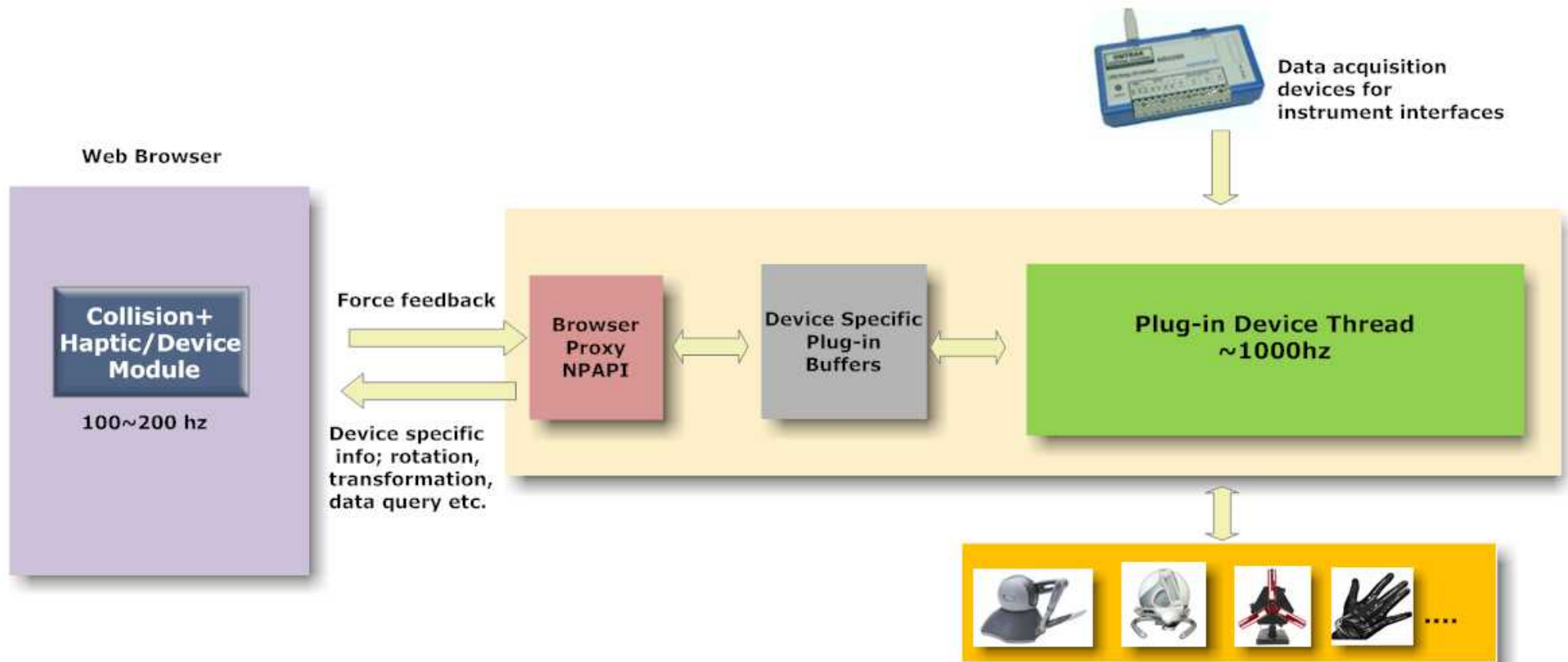
SOFMIS Framework on WEB

Main Thread



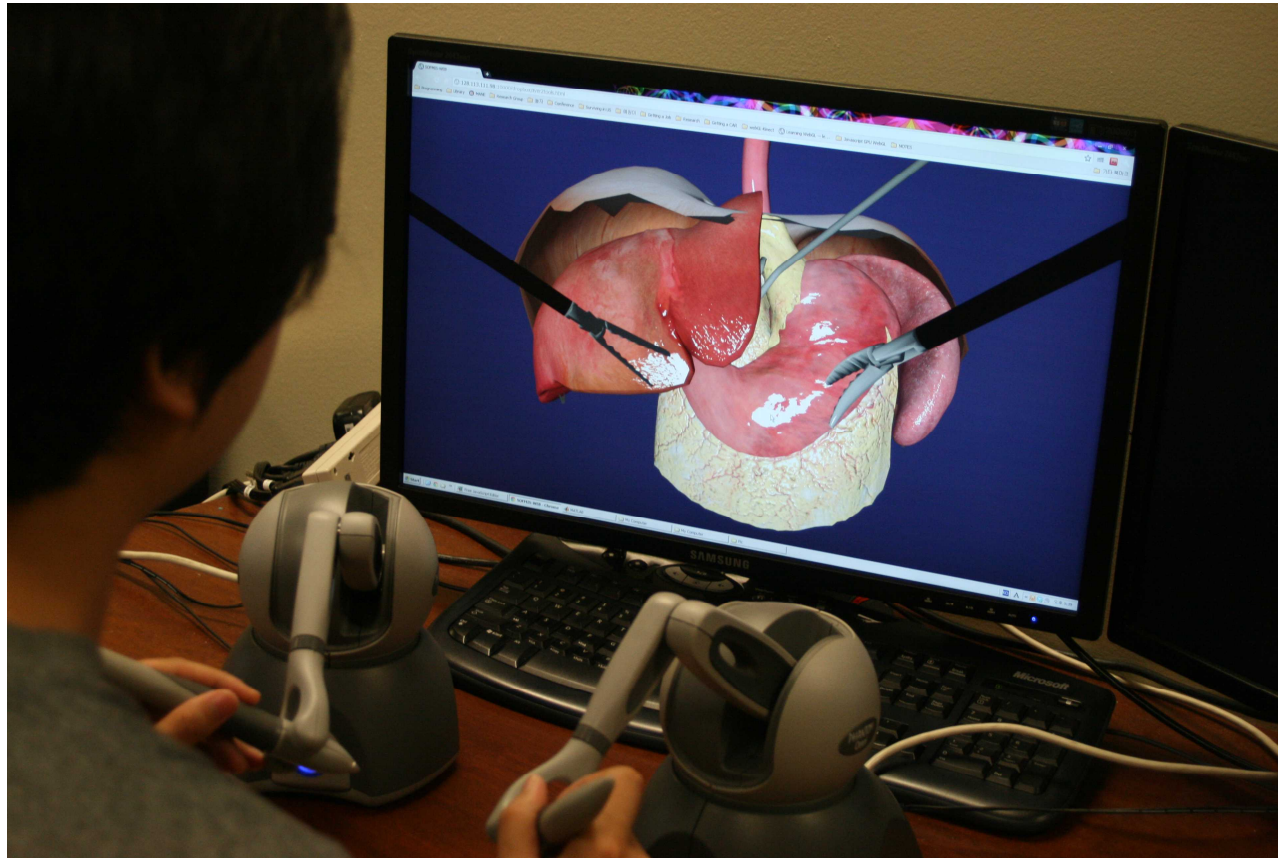
Rensselaer

Device Plug-in



Rensselaer

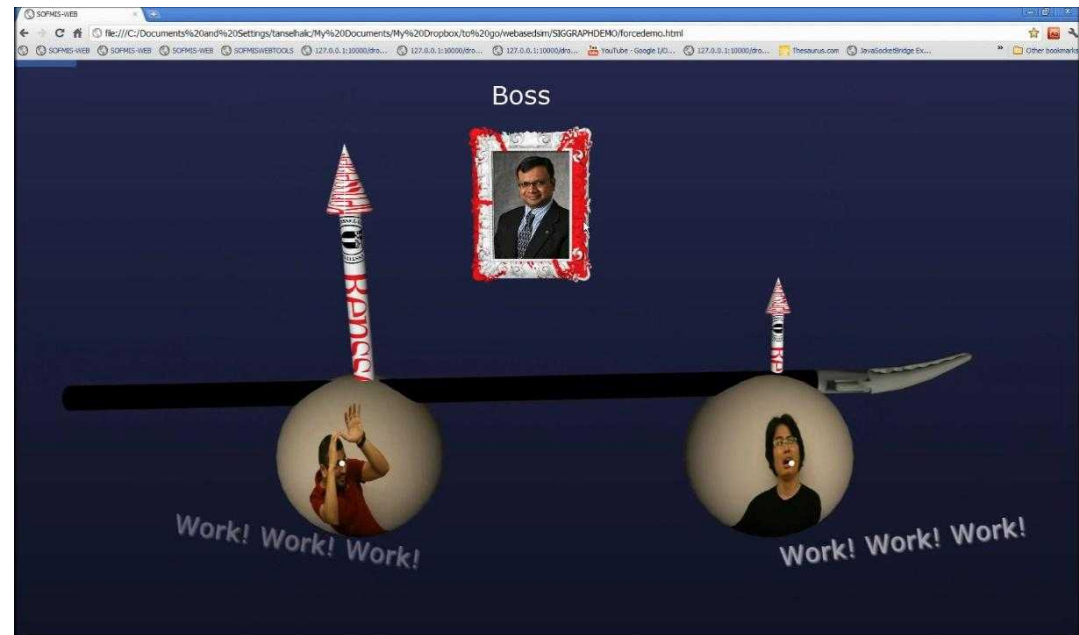
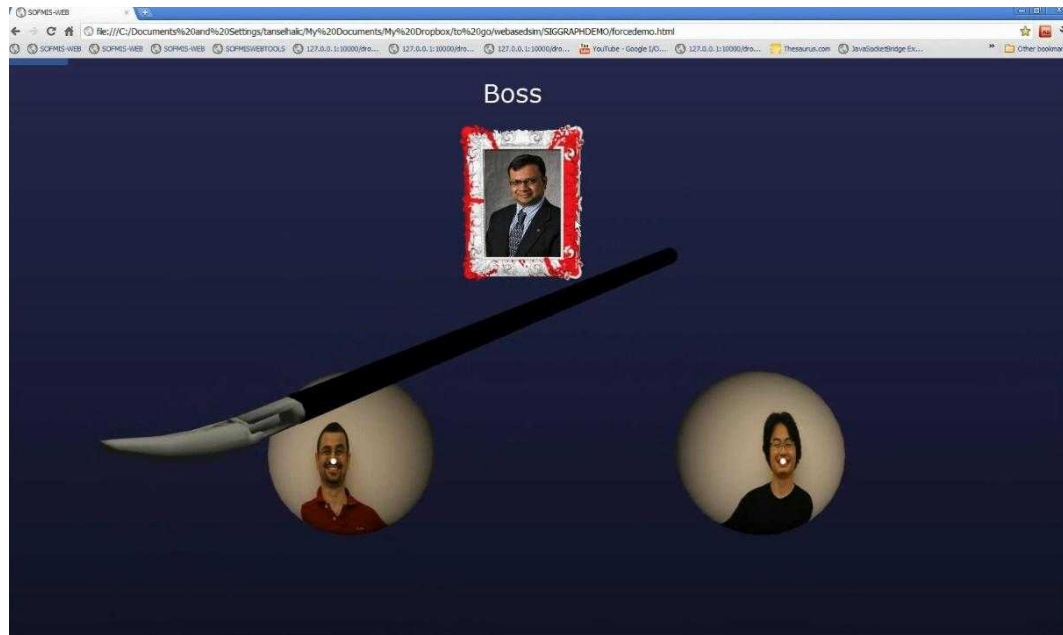
Overall System



Rensselaer

Demonstration 1

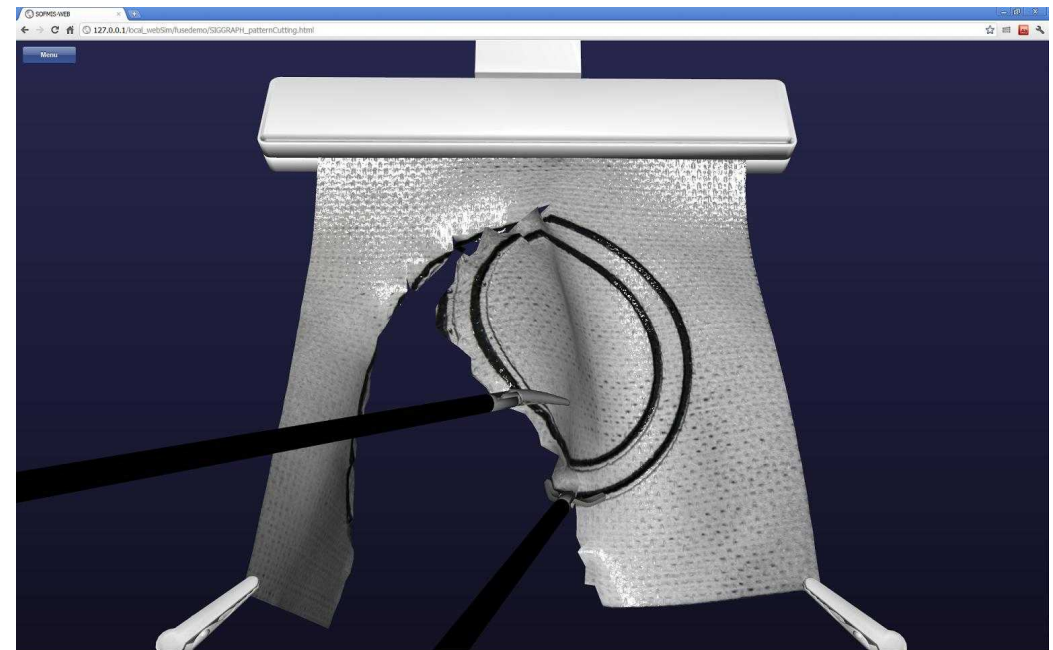
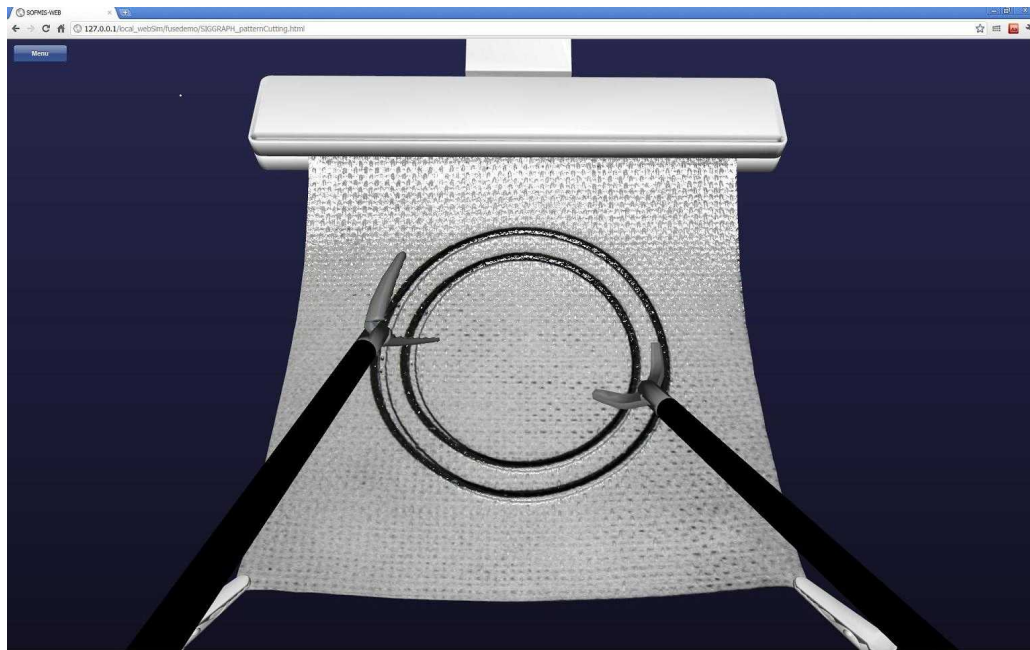
- Force Feedback with Plug-in



Rensselaer

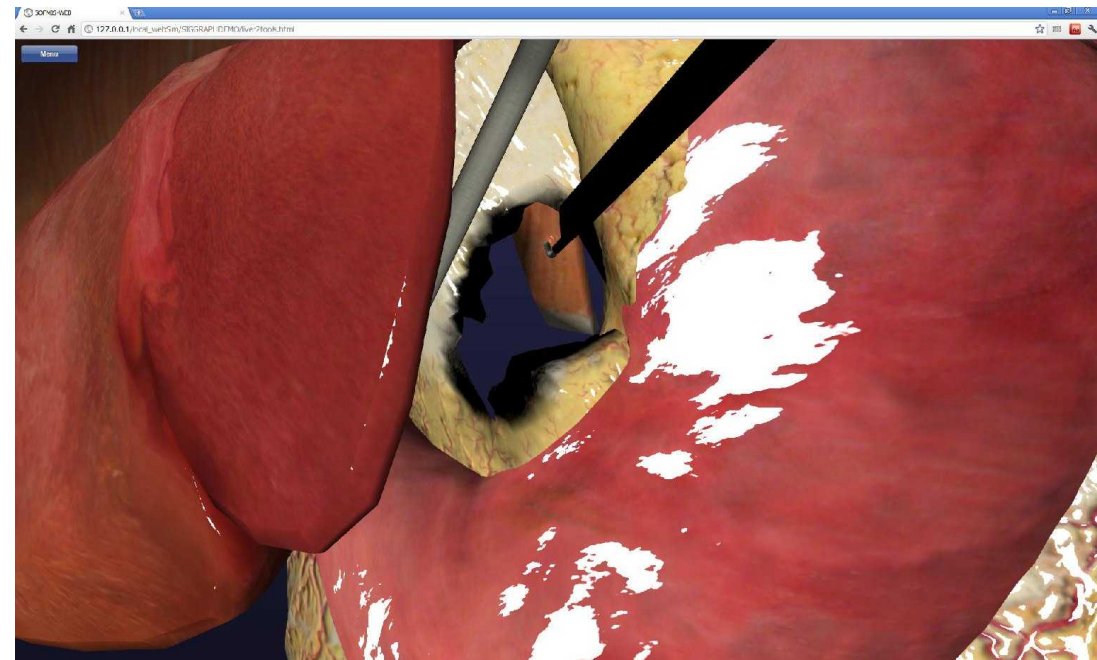
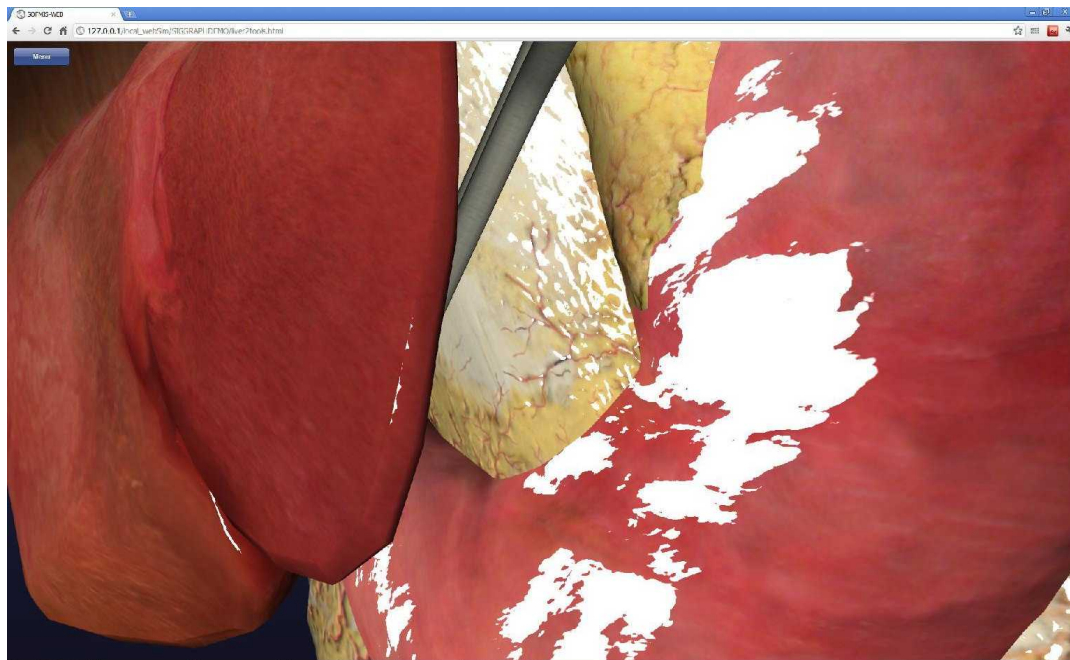
Demonstration 2

- FLS: Fundamentals of Laparoscopic Surgery

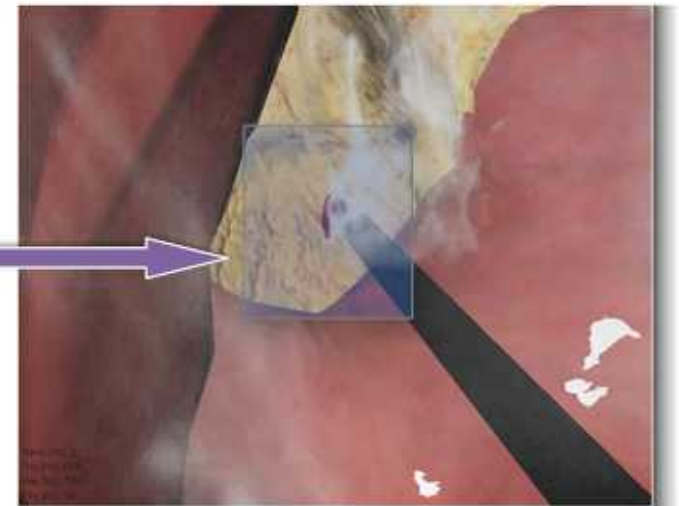
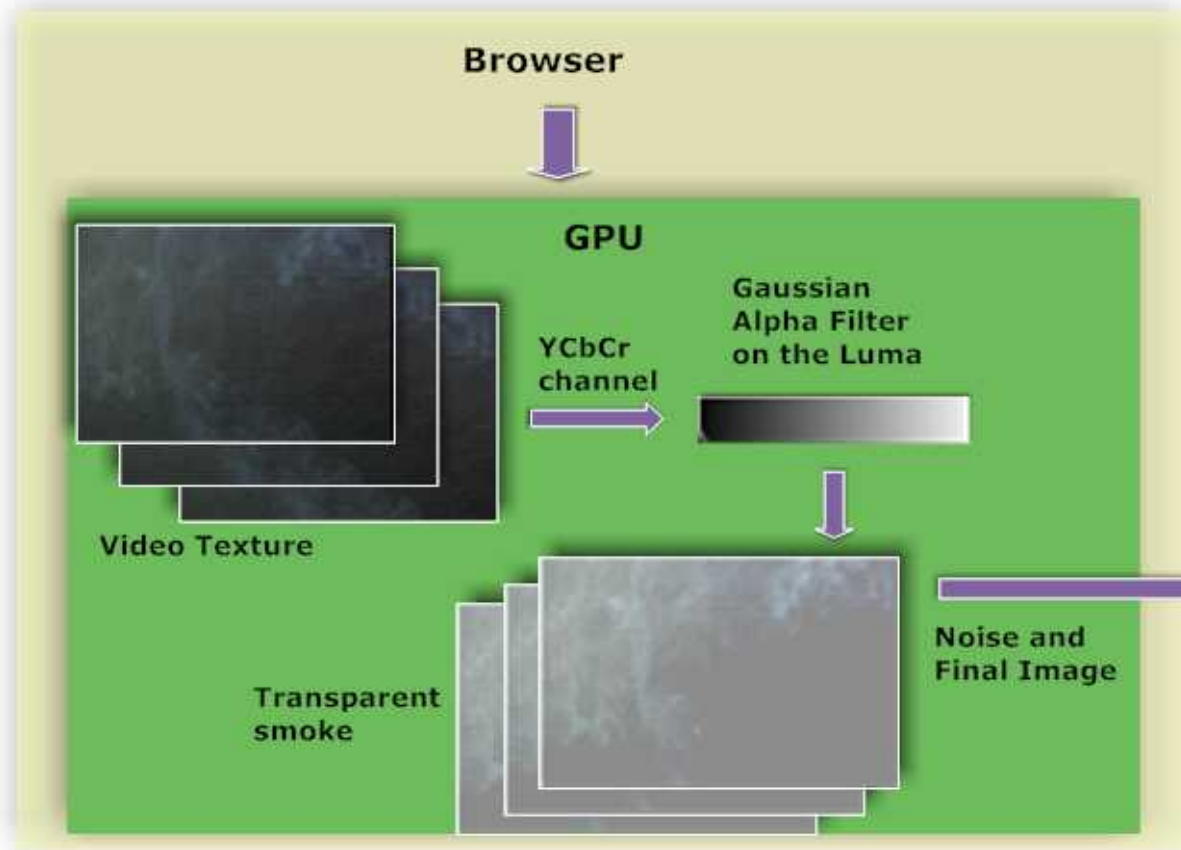


Demonstration 3

- LAGB: Laparoscopic Adjustable Gastric Banding



Smoke



Rensselaer

Spark and Burning

