Title of the project

Modeling and visualization of tissues for endoscopy simulators

Category (translational/bioengineering/biodesign): Bioengineering

Investigators (IISc and clinical institutions)

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Statement of research:

Virtual Reality-based medical simulators are beneficial in training clinicians without having to rely on animals and humans. An endoscopy simulator was developed in this spirit with immersive haptics and graphics. In this project, we propose to enhance the working device by incorporating tissue modeling and visualization. The work will proceed in collaboration with clinicians at the Asian Institute of Gastroenterology-Hyderabad and local hospitals in Bengaluru, where experiments will be done on excised and discarded human tissues to assess their mechanical properties. This information will be used in improving the haptic force models in the simulator. Additionally, real endoscopy images and videos will be collected and used to build disease models in the computer visualization part of the simulator. The new tissue models will be implemented in the already developed anatomically accurate upper GI model used in the working endoscopy simulator developed in IISc. The know-how from this project will be transferred to the start-up company, *Mimyk,* that is a start-up based on the work done in IISc. Appropriate human ethics clearances will be obtained.

The endoscopy simulator with instrumented endoscope, developed in IISc and incubated by Mimyk