Faculty of Computer Science

Proposal for Graduation Project 2018

InsideOut: A Modern Display of 3D tomographic images

One of the biggest challenges in interventional surgeries is how to estimate the position of specific organ inside the patient without having complete vision. In many cases, it takes so long time for the surgeon to estimate the position of the target organ using several shots of x-ray during the surgery. Also, in some cases the surgeon is guided by looking at 3D tomographic images displayed on a screen in the surgery room. InsideOut is modern technique that is used to display the 3D tomographic images on the skin of the patient. A specific slice corresponding to the position of the patient that represent the inside organs will be projected on the patient skin to let the surgeon to the correct position without additional x-ray shots.

Input/Output:

- Input: 3D tomographic images
- Output: A 2D image projected on the patient on exact position

Knowledge required:

- Image Processing
- Programing
- Image registration
- Computer vision

Beneficial entities:

- Scanning centers
- Hospitals

Hardware/Software requirements:

- Portable projector.
- Tomographic images collected from hospitals.

Expected outcome:

- New knowledge (yes)
- Research paper (yes)
- Commercial product (yes)