

Surgical Simulations: Commercial Usage of VR in Medical Training

In the last decade, VR Technology had matured to the point of being commercially applicable in Medical Training. Hands-on surgery experience used to be obtained only on live patients - but today, Surgical Simulators by Symbionix® and other companies enable practicing complete operations, in an interactive, haptic, high-fidelity virtual environment.

VR surgical simulation is gaining grounds as a medical educational tool. Among its benefits are: Safe and unlimited practice, many available didactic tools, instructor time saving, practice of rare and complicated pathologies, quantitative, exact feedback, and much more.

VR offers particular added value in simulating endoscopic operations, since in such operations real-life visual feedback is attained on a 2D monitor. Many platforms offer simulated tactile feedback (haptics) as well, thereby enhancing the user immersion.

Technology-wise, the R&D of such simulators has a lot in common with game development: modeling, 3D rendering, user interaction and most of all the need to run at interactive rates. Yet, medical simulations pose a few additional, substantial challenges:

1. *Interactive simulation of soft bodies.*
2. *Dynamic Geometry.*
3. *Online model creation*

The talk would survey both the achievements and the remaining challenges in this exciting, emerging field.

Medical Imaging



Ofek Shilon
Algorithmics Team Leader
Procedure Project Manager
Symbionix Ltd

Ofek Shilon is Algorithmics Team Leader and PROCEDURE Project Manager in Symbionix Ltd., the world leader in Surgical Simulations. He developed the physical /numerical kernel for the current generation of simulators. He holds an B.Sc. in Physics, and an M.Sc. in Mathematics, both Summa Cum Laude. Prior to joining Symbionix, he lectured at the Technion, the Hebrew University and the Open Israeli University.

