ENTERTAINING LESSONS: APPLYING GAMING TECHNOLOGY TO THE VIRTUAL PATIENT

Martin Nachbar, M.D. [1], Jean-Marc Gauthier, M.P.S., D.P.L.G. [3], Henry Feldman, M.D. [2], Zach Rosen[3], Miro Kirov[1], Marc Triola, M.D. [1,2]

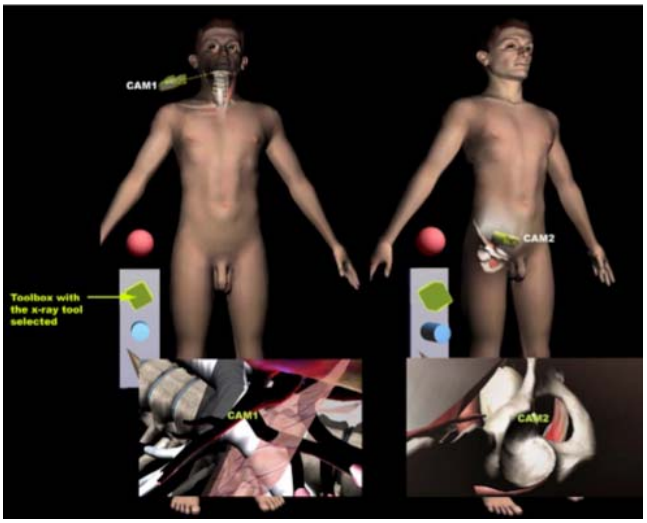
[1]Advanced Educational Systems Laboratory, [2]Section of Medical Informatics
New York University School of Medicine
[3]Interactive Telecommunications Program, Tisch School of the Arts
New York University

This project explores the convergence and synergy between computer gaming engines and medical visualization of 3D anatomic data. The goal is to create a prototype of an extremely realistic interactive virtual person/patient for teaching medicine. The project is producing novel interfaces for exploring the virtual body using a behavioral engine approach, inspired by gaming techniques. Our effort is guided by the concept of the viewer influencing rather than controlling the virtual patient.

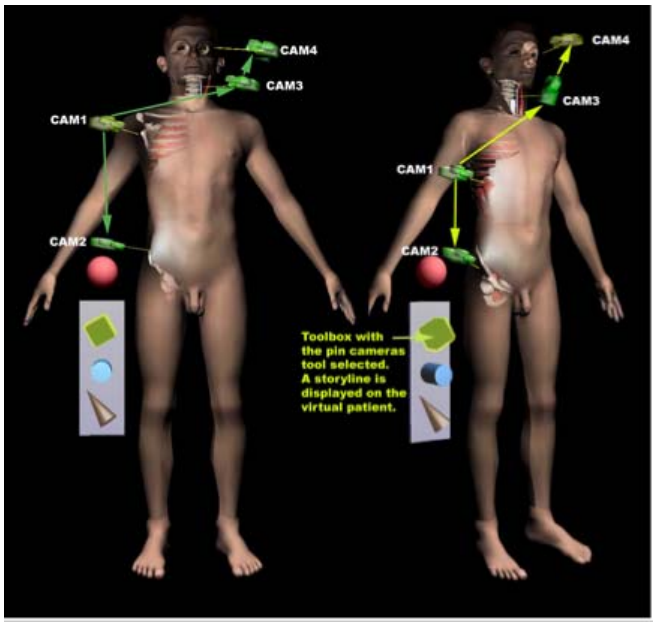
The construction of the 3D anatomic models that form the body of the virtual person uses data from the Visible Human Project, CT and MRI image data. The current prototype is a high-resolution 3D patient controlled with a set of interactive tools. The user is able to see exterior and interior elements of the body, can change the position of cameras around the patient, and select visualization tools from a 3D toolbox. The toolbox includes a navigation tool, an x-ray tool, a pin camera tool, a slicing tool, a cutting tool, a peeling tool, a storyline tool and a web tool. Each tool allows the user to manipulate the patient model or create customized views or animation paths. Current work is aimed at adding realistic motion (e.g. walking, sitting, gesticulation etc.) and emotion to the model. The figures below illustrate the current model and some of the interactive tools.

Funding for this research is provided in part by NYU's CDCF 2004-2005 grant.

The X-ray tool: Positioning the camera allows close-up transparent views to the interior anatomy



The storyline tool: Students and teachers can create custom animations by linking together multiple cameras



The slicer tool: Users can advance through the model and see the corresponding anatomic and radiologic images