Title: 3D visualization of medical images for personalized learning of human anatomy

Authors (name all authors and affiliations): H. Bijwaard*, J.S. Scheurleer*, L. Alpay*
* Medical Technology Research Group, Inholland University of Applied Sciences

Presenter (typically one of the authors): H. Bijwaard

Subject Area (up to 3): self-tracking and smart coaching

Link to the conference theme (optional): The 3D visualization tool that we present is a form of persuasive technology for students to learn about human anatomy. It allows students to play with the 3D environment and we envisage exercises in the form of serious games in the near future. In this way it relates well to the conference theme: Designing Persuasive Tech for Health

Abstract describing the paper/poster/demo (50 words max): We present Dave: a combination of a whole body CT scan visualized in 3D and a personalized learning platform containing extensive information about human anatomy. First year MBRT students can fly through Dave and click on organs and tissues. Dave gives verbal explanations and refers to background information and exercises.

Supporting summary (500 words max, plain text-format): Medical imaging nowadays often yields high definition 3D images (from CT, PET, MRI, etc.). Usually these images need to be evaluated on 2D monitors. In the transition from 3D to 2D the image becomes more difficult to interpret as a whole. To aid students in appreciating the full 3D image and to monitor their progress in recognizing topographic anatomy and pathology in 3D medical images, Dave has been developed.
Dave is the fruit of a collaboration between PS-Tech, Luminis, the Free University and Inholland University of Applied Sciences. In the coming months a beta version of Dave will be tested at Inholland by students and teachers of the bachelor course Medical Imaging and Radation Therapeutical Techniques (MBRT). Dave will initially be employed in the anatomy classes, but once further developed Dave may be used to recognize pathology and for treatment planning.

Dave is a stereographic projection of a whole body CT scan that can be manipulated, and that is coupled to a personalized learning platform. Dave can be viewed and manipulated on a so-called C-station developed by PS-Tech (see http://www.ps-tech.com/3d-workstations). It is possible to fly through Dave and click on his organs and tissues for information. Dave explains what can be seen on the image and may refer the user to more background information on anatomy that is stored in the learning platform provided by Luminis (see http://www.pulseon.nl/nl/). The platform not only provides more information and learning materials; it can suggest personalized exercises and it monitors all actions performed. In this way the time spent on different topics and the results of exercises can be compared to the results of examinations. Different users can be approached with different tasks based on the profile that is created in this way. Each user will then be approached in the way that is optimal for him or her in a learning sense.