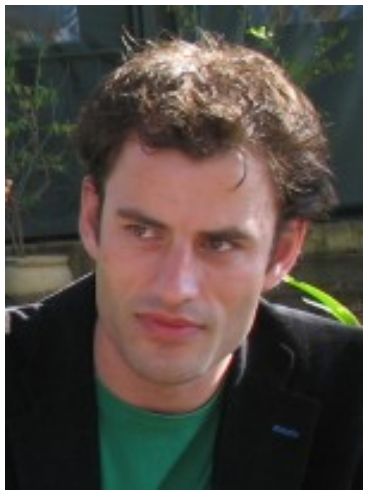
Dec. 18th: Invited Talk (2/2)



Charl Botha,
Delft University of Technology, The Netherlands

Computer-assisted Shoulder Replacement

Thu., **2008-12-18**, **14h15**–15h

Store Aud. (2144), **Høyteknologisenteret**,
Thormøhlensgate 55

Abstract:

Pre-operative planning systems aid clinicians by giving insight into patient-specific issues before surgery is performed. The ability to perform a virtual shoulder replacement procedure enables the surgeon to explore the probable and plausible outcomes. Pre-operative planning software assists the surgeon in this complex decision-making process.

In our prototype pre-operative planning system for shoulder replacement, we create patient-specific bone-determined range of motion (ROM) predictions based on collision detection using segmented pathological CT-data. The gleno-humeral ROM is visualised with motion envelopes, that indicate the maximum range of motion of the humerus in every direction. The prosthesis placement parameters can be adjusted interactively in our simulator, during which a novel visualisation technique depicts the differences between the current and previous range of motion. Recently we used a prototype intra-operative guidance module of our own design for performing a cadaver study, in order to validate the ROM simulation.

In this talk I will discuss our complete medical visualisation pipeline for shoulder replacement: acquisition, processing and segmentation, patient-specific motion modelling, visualisation, intra-operative guidance and evaluation. If time permits, I will also give a live demo of some aspects of the system.