

## The MedViz Conference 2013 in Bergen

# News in Ultrasound Imaging and Advanced Visualization

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Medical Imaging and visualization contributes significantly to diagnosis and treatment of many patients. A doctor builds many clinical decisions on information displayed in medical images. Often, interventions and image-directed therapy are performed in close proximity to image acquisition and diagnostics procedure. MedViz – a Research & Develop-

ment cluster in Bergen, Norway, is a cluster of groups performing interdisciplinary research in advance image analysis and visualization. The aim of MedViz conference is to present state-of-art research and to provide a meeting place where basic scientists can meet with clinicians and engineers to enable translational communication and research.

The 2013 conference was held on the 15<sup>th</sup> of January in Bergen and consisted of four oral sessions and two poster presentation sessions. During breaks, PhD and Post-Doc students had the opportunity to present their posters and discuss science. The program covered advance topics in ultrasound visualization and image processing, and image-guided therapy.

### The First Session: Ultrasound Visualization and signal processing

Stefan Bruckner from Vienna (starting a professorship in March in Bergen) introduced an exciting and joint project between the Vienna Univ. of Technology and GE healthcare Austria named “Real-time Fetoscopic visualization of ultrasound data”. The aim was to improve the visual quality of images generated from 4D ultrasound data. The fetoscopic rendering technique has been successfully integrated in state-of-the-art ultrasound system GE under the name HDlive, and it is daily used in many prenatal centers around the world. PhD student Åsmund Birkeland, from Department of Informatics at the University of Bergen, proposed a semi-automatic local region method for segmenting 3D ultrasound scans called: “Ultrasound-based Visualization of Blood Flow”. According to Åsmund the user select starting points from a region and then visually inspect the extracted vessel.

### The Ultrasound Imaging and Therapy Session

Adrian Saftoiu from the Department of Research in Craiova, Romania, introduced the concept of translational imaging, and focused on Endoscopic Ultrasound (EUS), its clinical impact in pancreatic diseases and challenges.

EUS is used for visualization of tissue hardness which has become technically possible in a number of clinical applications. Roald F. Havre from National Centre for Ultrasound in Gastroenterology (NCUG) at Haukeland University hospital in Bergen was the second speaker of the session. He mentioned that there are now several methods for measuring tissue hardness with ultrasound and he highlighted the most important aspect of each of them.

The conference turned from a clinical into physics and mathematics environment when Dr. Spiros Kotopoulos, from NCUG and Dept of Physics and Technology at UiB, introduced a promising and exiting topic “Sonoporation: The hurdles that need to be surpassed”. He described his current work and stated that further work will be to design custom micro- bubbles to perform sonoporation with advanced equipment. Emmet McCormack showed some results of a study that explored the effect of sonoporation, the formation of transient pores in the cell membrane due to ultrasound and micro-bubbles, for increased targeted drug delivery of gemcitabine in an orthotopic xenograft model of pancreatic cancer. Finally in this session, Dr. Georg Dimcevski, clinician at Haukeland University Hospital, reinforced the promising aspects of sonication with ultrasound and ultrasound contrast agents. He described a promising experimental study that evaluated and compared the toxic effects and safety of gemcitabine in combination with ultrasound contrast agent under sonication with gemcitabine alone.



Fig. 1 MedViz conference 2013 at Terminus Hotel, Bergen, Norway.



Fig. 2 The Poster sessions with lively discussions and interdisciplinary mingling.



Fig. 3 The best poster prize was awarded to Erend Hodneland (Mathematician) by Prof. OH Gilja.

### Poster Impact

There could not be a better scenario for the MedViz Visionaries than the poster session. Engineers, clinicians, experts, students, PhD’s, post-docs, all with different background exchanging ideas, suggestions, experiences and knowledge throw the Poster session.

### A Happy Ending

The event concluded with a delicious typical Norwegian deer dinner. Prof. Ragnar Nortvedt, the MedViz program manager, introduced a new MEDVIZ song and gave us a good time with a group of retired professors that enjoy singing. The best poster prize of an iPad was awarded to Erlend Hodneland by MedViz Scientific Director OH Gilja.

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