

IMI RESEARCH SEMINAR

DATE: 17 June 2014, Tuesday

TIME: 11:00 am – 12:30 pm

VENUE: IMI Seminar Room, Research Techno Plaza, XFrontiers, Level 03-01
50 Nanyang Drive, Singapore 637553

*Lunch will be served



Dr Hon Fai CHOI - Visiting Researcher, MIRALab

Hon Fai Choi is currently a Marie-Curie postdoctoral researcher in the MIRALab at the University of Geneva in Switzerland, working on the European FP7 MultiScaleHuman project under the supervision of Prof. Dr. Nadia Magnenat-Thalmann. He received a M.Sc. in biology (2006) from Ghent University and a M.Sc. in physics (2002) and a PhD in biomedical sciences (2011) from the Catholic University of Leuven in Belgium. He was a BAEF postdoctoral fellow at the University of Virginia, USA, in 2012. His research focus is on computational musculoskeletal modeling, with an emphasis on muscle biomechanics.

Topic: Modeling Fiber Anisotropy in Multiscale Musculoskeletal Soft Tissues

Non-invasive subject-specific evaluation of the mechanical properties of musculoskeletal soft tissue organs (muscles, tendons, ligaments and menisci) with clinical methods is a technically challenging task. Simulations in virtual 3D anatomical models reconstructed from medical imaging provide an instrument to receive feedback on realistic mechanics behavior, but require an adequate computational representation of the tissue anisotropy brought by the fibrous architecture. In this presentation, an overview of methodologies to model fiber anisotropy in musculoskeletal soft tissues is outlined and the application of a Laplacian based approach as a collective strategy is demonstrated.



Andra CHINCISAN - Visiting Researcher, MIRALab

Andra Chincisan is a PhD candidate in the MIRALab at the University of Geneva, Switzerland. She is working on the European FP7 Marie Curie MultiScaleHuman project under the supervision of Prof. Dr. Nadia Magnenat-Thalmann. She received a M.Sc. in Multimedia Technologies (2012) and a B.Sc. in IT and Telecommunications (2010) from the Technical University of Cluj-Napoca, Romania. She was an Erasmus student at the University of Angers, France (2010). Her research is focused on musculoskeletal modeling of human articulations.

Topic: Multimodal and Multiscale Modeling of the Human Knee Articulation

This presentation describes multimodal and multiscale approaches for musculoskeletal modeling. We will present the integration of multiple biological scales modalities for the human knee articulation. Merging data from different modalities demonstrates a physiological basis for an instrumental assessment tool that can assist diagnosis and treatment of musculoskeletal diseases. The research is supported by the EU FP7 Marie Curie project MultiScaleHuman.



Matthias BECKER - Visiting Researcher, MIRALab

Matthias Becker is a Ph.D. candidate and research assistant in Computer Science at MIRALab at the University of Geneva. He obtained his M.Sc. in Computer Science from the Leibniz Universität Hannover, Germany, in 2011. His research interests include medical imaging techniques, image filtering, segmentation, and deformable models. He currently works on the EU research project MultiScaleHuman.

Topic: Anatomical Modelling for the Multiscale Human

Medical imaging has become a corner stone in clinical routine practice, requiring robust computational segmentation procedures for morphological analysis. We will present the pipeline from image acquisition to pre-processing and segmentation. We will show the concept of deformable models which play an important role due to their flexibility, robustness and the possibility to adapt model properties. This research is supported by the EU FP7 Marie Curie ITN MultiScaleHuman.



Dr Jun LEE - Research Fellow, IMI

Jun Lee is a research fellow at the Institute for Media Innovation, Nanyang Technological University, Singapore. Before joining Nanyang Technological University, he was a post doctor at Ubiquitous Technology Association and Human Computer Interaction Lab at Konkuk University, being involved in research activities on virtual reality. He received his BS, MS and PhD degrees from Konkuk University, Korea, 2004, 2006 and 2012. His research interests include shared object manipulation in 3d telepresence environment, multi-modal interactions, computer games and bio-medical applications.

Topic: Shared Object Manipulation for Obstetric Management Training System in an Immersive Virtual Environment

This presentation describes shared object manipulations for medical practitioners who cooperate as team members. In the immersive virtual environment, the students can interact with a virtual medical instrument or a virtual patient in order to perform surgical operations concurrently. We will present interactive gestures and their object manipulation methods to reduce medical errors and mistakes of the students. The research is supported by the Lee Kong Chian School of Medicine, Nanyang Technological University.