

# IMI PhD INTERDISCIPLINARY SEMINAR

**DATE:** 12 March 2013, Tuesday  
**TIME:** 11:00 am - 12:35pm  
**VENUE:** IMI Seminar Room, Research Techno Plaza, XFrontiers, Level 03-01  
 50 Nanyang Drive, Singapore 637553  
 \*Lunch will be served



**Dr S M MIZANOR Rahman**  
Research Fellow  
IMI

## **EVALUATING THE PERFORMANCES OF ARTIFICIAL SOCIAL AGENTS OF DIFFERENT EMBODIMENTS IN ASSISTING THE HUMAN IN A REAL-WORLD TASK**

Two artificial social agents of different embodiments were developed and enriched with various similar functionalities. These agents were employed separately to assist the human in performing a real-world task. Performance measurement method, the standards for the performances of the agents and an algorithm for the cooperation between the virtual human and the robot in finding the object were developed. The performances were subjectively evaluated and compared with the standards. Various hypotheses regarding the performances of the agents while interacting between themselves and with the human were tested. The results show that the performances of both the virtual human and the social robot were satisfactory though there were differences in the performances due to the differences in their embodiments, anthropomorphism etc.



**LAI Danbo**  
PhD Student  
IMI/SCE/NIE

## **INTERACTIVE FREE-FORM SHAPE MODELING IN CYBERWORLDS**

When procedural models based on implicit functions are used for defining complex shapes, the final model may become slow for rendering. We propose an algorithm for accelerating such rendering for free-form shape modeling where some initial shape is gradually modified by other implicitly-defined shapes with relatively smaller sizes compared to the final function script, which makes the rendering of the whole shape faster.

The resulting accelerated function scripts can be then rendered on any suitable rendering platform that we illustrate by using function-based extension of VRML/X3D and POV-Ray.



**Jaroslaw KOCHANOWICZ**  
PhD Student  
IMI/SCE

## **PSYCHO-SOCIOLOGICAL MODELS FOR VIRTUAL AGENTS AND GROUPS**

Social simulation is a young and vibrant discipline interested in modeling structure of the society, processes and relations within it. In this presentation, I will discuss current limitations in the field and present a novel modeling approach and cognitive-affective architecture elements for believable social agents capable of supporting explicit cultural contents. While arguing necessity of application of psychologically complex individual agents for emergence of group culture I will propose expansion of typical existing agent models with socio-cultural element based on significant concepts from psychology and sociology. I will also show how it enables creation of agents with more believable personality and other characteristics, and may in future allow new level of group culture emergence.



**LI Bingbing**  
PhD Student  
MAE/IMI

## **HUMAN BEHAVIOUR CAPTURING AND RETARGETING IN TELE-PRESENCE**

In a natural communication between two people, body language accounts 55% of the total meaning of the message.

In the project, we develop a method to capture the body movement of a user, quantize the motion, make a simplified motion which is performable for a robot and retarget the motion to the robotic avatar. In the same time, this retargeting needs to keep as much information of the message as possible. Inertia sensors are used as primary data acquisition sensors. A further development of this model including behaviour prediction will be discussed.