

IMI PHD INTERDISCIPLINARY SEMINAR

DATE: 28 January 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 CHEN Renjie
Visiting Researcher,
IMI

Planar Shape Interpolation with Bounded Distortion

Planar shape interpolation is widely used in computer graphics applications. Despite a wealth of interpolation methods, there is currently no approach that produces shapes with a bounded amount of distortion with respect to the input. As a result, existing interpolation methods may produce shapes that are significantly different than the input and can suffer from fold-overs and other visual artifacts, making them less useful in many practical scenarios. We introduce a novel shape interpolation scheme designed specifically to produce results with a bounded amount of conformal (angular) distortion. Our method is based on an elegant continuous mathematical formulation and provides several appealing properties such as existence and uniqueness of the solution as well as smoothness in space and time domains.



YUAN Quan
PhD Student
IMI/SCE

Who, Where, When and What: Discover Spatio-Temporal Topics for Twitter Users

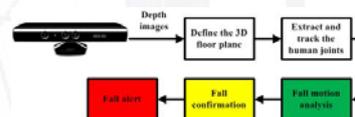
Micro-blogging services, such as Twitter, and location-based social network applications have generated short text messages associated with geographic information, posting time, and user ids. The availability of such data received from users offers a good opportunity to study the user's spatial-temporal behavior and preference. In this presentation, we will introduce our proposed probabilistic model W^4 (short for Who+Where+When+What) to exploit such data to discover individual users' mobility behaviors from spatial, temporal and activity aspects. To the best of our knowledge, our work offers the first solution to jointly model individual user's mobility behavior from the three aspects. Our model has a variety of applications, such as user profiling and location prediction; it can be employed to answer questions such as "Can we infer the location of a user given a tweet posted by the user and the posting time?" Experimental results show that the proposed model is effective in discovering users' spatial-temporal topics, and outperforms state-of-the-art baselines significantly for various tasks.



ZHANG Juzheng
PhD Student
IMI/SCE

Partial Forgetting in Episodic Memory for Autonomous Virtual Human

Episodic memory enhances the believability and the autonomy of the autonomous virtual human in human-computer interactions. Just like the real human who usually remembers the gists of his experience while forgets the other unimportant details, the autonomous virtual human should also own an episodic memory system which supports partial forgetting. This research focuses on building a general, task-independent, objective and quantitative measurement for the activation (easiness of remembering) of all the features in a generic episodic memory. Both the frequency and the similarity of the episodic memory records are taken into consideration with the tools from the information theory. We also consider the interference-induced forgetting in retrieval by biasing those episodes with more unique features.



BIAN Zhenpeng
PhD Student
IMI/EEE

Fall Detection Based on 3D Joint Trajectory

One of the biggest risks for elderly people is fall accidents, especially for the elderly people living alone. When the elderly person is living alone and has a fall accident, he/she may be lying on the floor for a long time without help. This scenario mostly will lead to a serious negative outcome. Therefore, a fall accident detection system, which can automatically detect the fall accident and call for a help, is very important for the elderly people, especially for the elderly people living alone. The traditional camera based fall detection system is limited by the 2D information of RGB image. We develop a fall detection approach based on depth camera. By analysis the 3D joint trajectory extracted from the depth images, we can detect the fall accident well. The experimental results outperform that of the state-of-art methods.