UNIVERSITÀ DELLA CALABRIA

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

Ph.D. programme in Mathematics and Computer Science

Title: **"On the way to reliable and efficient data-driven simulation of crowd dynamics"**

Speaker: Jakub Porzycki, AGH University - Kraków

Abstract: The most popular application of crowd dynamics simulations is the off-line testing of the different scenarios in existing or projected buildings. However, in recent years one can observe an increasing interest in on-line, data-driven crowd simulations.

In this approach, real data about passing pedestrians and its transport parameters (e.q. speed) are used in order to obtain short time prediction of crowd movements. Such solution can be used to increase pedestrians safety and comfort, both in buildings and outside areas. On the other hand, this requires compromise between reliability and efficiency.

Number of different issues should be considered before on-line data-driven crowd dynamics simulation can be fully utilized. This presentation focuses on the following issues:

- models verification and validation,
- models comparison with respect to its reliability and efficiency,
- methods of data extraction from different types of sensors,
- division of simulation space into graph nodes and synchronization protocol,
- pedestrian dynamics observations and experiments.

Finally, working prototype of data-driven simulation will be presented. Proposed system allows on automatic re-calibration of simulation. Moreover, different models can be used independently in each node.

Short Biography: Jakub Porzycki is Research and Teaching Assistant at the AGH University of Science and Technology in Kraków. His scientific interest are related with complex systems modeling and simulation, with special attention to crowd dynamics. His work focuses on data driven simulations, pedestrian behaviour experiments and observation, cellular automata models of crowd dynamics as well as models verification and validation. Other research are dedicated for social networks analysis and modeling. Besides, he specializes in teaching of basic concepts of programing for kids, teenagers and adults.

Date	Time	Room
05/07/2016	16:30	MT11– 30B