



## Futuristic Interactive Technologies

### A background in the entertainment game industry

The RDI activities of the research group focus on the agile utilization of Futuristic Interactive Technologies, known from the entertainment industry, in different fields of operation. Traditionally, the game industry has tried to utilize the currently available and developing soft- and hardware capacity to the max. Innovations used in the gaming industry such as game engines, motion detectors, virtual glasses and tools of augmented reality are examples of technologies which are increasingly benefited in developing new, interactive solutions also outside the gaming industry. The RDI activities of the research group are interdisciplinary and multidisciplinary. At the core of the RDI activity, there is versatile understanding and expertise on the agile application of the game development processes in the entertainment game industry in practice, starting from game development and graphic design to game programming and testing. Expertise on understanding and applying the game development processes of the entertainment game industry is fostered by integrating the operations of the research group as a solid part of the implementation of TUAS' competence path in game technology.

### Focus areas of the research group's RDI activities

As stated above, the RDI activities of the research groups aim at extensive utilization of interactive technologies in different fields of operation. The research group works in close interaction and cooperation with business life. Innovative, interactive technology solutions are implemented for the technology industry and the fields of well-being, education and tourism in cooperation with experts from different sectors. The focus point of the operations are RDI activities related to gamification, serious games, game-based simulations, augmented reality and virtual environments.

The activity of the research group is applied. The main target is to find principles of user-centred design and quick prototyping by using interactive UX solutions with certain novelty value for new applications. Thus we try to create prerequisites for business life to create product innovations and services which are visually appealing and have a rich user experience. Applying interactive technologies enables the introduction of new business models and assists in formulating the world-famous Finnish technology competence in a more saleable form.

### Aims of the RDI activities

The target of the research group in Futuristic interactive technologies is to profile itself as an international-level actor in applying interactive UX technologies. The research group is involved in central Finnish and international funding programmes. The research group collaborates closely with business life representatives, with the other research groups at TUAS

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### Research group leader



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### Partners

University of Turku  
Turku Science Park  
Turku Region Development Centre  
IGDA Finland  
Tekes-hankkeiden yrityskonsortiot  
Sendai Finland Welbeing Center  
Tohoku University  
Nanyang Technological University

### Ongoing projects

Fast Wow Effects Boosting SME Business  
Virtual Reality in Driving Inspection  
Activage

#### Projects ended:

Gamified Solutions in Healthcare

### Most recent publications and products

Katajapuu, N., Granholm, P., Hiramatsu, M., Ishihara, E., Hirayama, J., Pitkäkangas, P., Qvist, P., and Luimula, M. Brain trainer exercise game. Field tests in Finland and Japan, In: Proceedings of International Journal of Chemistry and Chemical Engineering Systems, Bali, Indonesia, 2016, pp. 39-45.

Pyae, A., Raitoharju, R., Luimula, M., Pitkäkangas, P., & Smed, J. (2016). Serious games and active healthy ageing: a pilot usability testing of existing games. International Journal of Networking and Virtual Organisations, 16 (1), 18p.  
Luimula, M., Pitkäkangas, P., Saarenpää, T., Bulatovic Trygg, N., and Pyae, A. Students' Role in Gamified Solutions in Healthcare RDI Project, In: Proceedings of the 12th International CDIO Conference

and with different research institutes. The research group comprises academically merited researchers, freshly graduated engineers and student assistants. TUAS students from different competence paths are extensively involved in the activities of the research group.

## Members

Mika Luimula  
Taisto Suominen  
Natasha Bulatovic  
Pekka Qvist  
Simo Ruotsalainen  
Oskari Tamminen  
Aukusti Manninen  
Janne Nylander  
Shovit Thapa  
Kimmo Tarkkanen  
Paula Ailio  
Marika Säisä  
Anttoni Lehto  
Werner Ravyse  
Mohammad Khorasani  
Sami Laukkanen

## More Publications

Nakai, A., Pyae, A., Luimula, M., Hongo, S., Vuola, H., and Smed, J. Investigating the Effects of Motion-based Kinect Game System on the User's Cognition, *An International Journal on Multimodal User Interfaces*, online first, August, 2015, pp. 1-9.

Pyae, A., Luimula, M., and Smed, J. Rehabilitative Games for Stroke Patients, *EAI Endorsed Transactions on Pervasive Games*, Vol. 1/4, July 2015, e2, 11 p.

Yoshii, A., Malmivirta, H., Luimula, M., Pitkäkangas, P., and Nakajima, T. Designing a Map-Based Application and a Conversational Agent for Addressing Memory Problems. In: *Proceedings of the 17th International Conference on Human-Computer Interaction*, August 2-7, 2015, 6p.

Pieskä, S., Kaarela, J., and Luimula, M. Enhancing Innovation Capability with Cognitive Infocommunications, *An International Journal of Intelligent Decision Technologies*, Vol 9/1, January 2015, pp. 67-78.

Jämsä, J., Sukuvaara, T., and Luimula, M. Vehicle in a Cognitive Network, *An International Journal of Intelligent Decision Technologies*, Vol 9/1, January 2015, pp. 17-27.