

Resume

I have worked full-time with Augmented & Virtual Reality since 2007, designing and implementing AR and VR applications with my focus being on 3D user interfaces, computer graphics, and computer vision. I have good connections within the international VR business and research communities, as I have regularly participated in VR conferences since 2011. I have taught a VR project course for 5 years in Aalto University, and supervised 5 research assistants in two of my own projects.

Currently I'm developing [RUIS](#), an open source VR toolkit aimed for prototyping experimental VR applications. My VR-themed [YouTube channel](#) has gathered over 200,000 views.

Specialties: virtual reality, augmented reality, software architecture, programming (C#, C/C++, Java), interaction design

Personal information

Born in 1982 at Espoo, Finland.

Languages

Native Finnish, fluent English, good Japanese, good German, satisfactory Swedish.

Education

2017 Doctor of Science, Department of Computer Science, Aalto University.

Thesis: **A Toolkit for Virtual Reality Software Development**

2009 Master of Science in Technology, Department of Media Technology, Aalto University.

Thesis: **Optical Finger Tracking Using Color LEDs**

Grade average of all courses: 4.74 (max 5.0), graduated with honors.

Work experience

- 2007 – present day, researcher in Aalto University Department of Media Technology, working with AR and VR applications, 3D user interfaces, and technologies behind them (motion tracking, sensor fusion, computer graphics). I also do teaching in courses with topics like VR, 3D animation, and user interfaces.
- 2006, research assistant: Summer job where I refactored the code of an existing virtual reality software platform at Helsinki University of Technology.
- 2005, research assistant: Summer job which included 3D model creation at Helsinki University of Technology.

Invited speaker

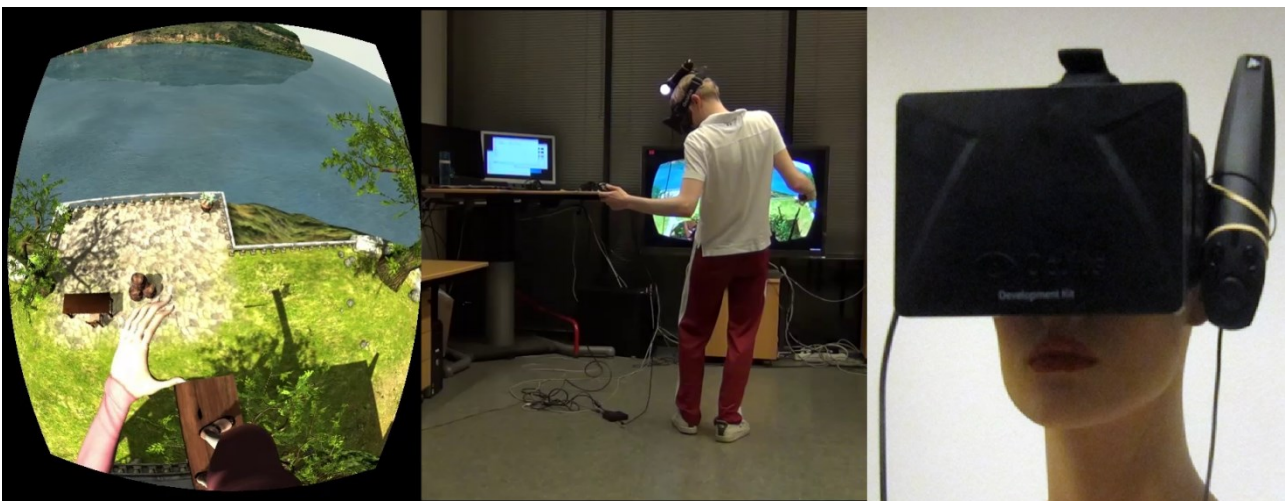
- Art & Virtual Reality event of ARS17 at Kiasma (2017) - Helsinki, Finland.
- ARTtech seminar at Assembly computer festival (2016) - Helsinki, Finland.
- AEC Hackathon 2.7 (2015) - Helsinki, Finland.
- Junction X Helsinki (2015) - Helsinki, Finland.

Awards and acknowledgments

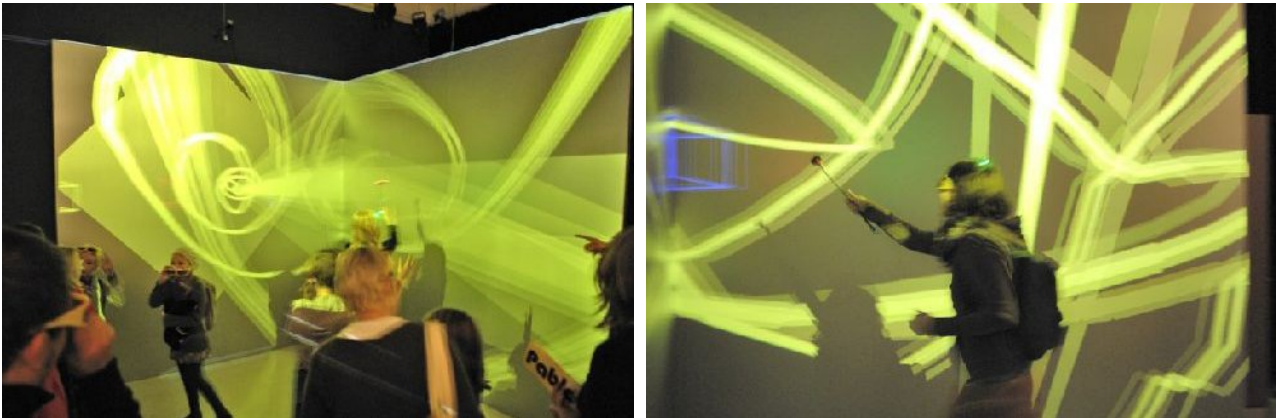
- 2016 Co-wrote an application that secured a 250,000 € grant to Finnish VR association (FIVR).
- 2013 Received a 5,000 € grant from Nokia Foundation.
- 2013 Chosen to participate in Aalto Entrepreneurship Society's ThinkBIG, a paid 2-week trip to Silicon Valley with some of the brightest students in Finland.
- 2013 Received 5,000 € funding from Aalto University's Media Factory for my [RUIS-project](#).
- 2013 Received a 10,000 € grant from The Research Foundation of Helsinki University of Technology.
- 2013 "[Best low-cost solution](#)" prize in the annual 3DUI contest at IEEE Symposium on 3D User Interfaces.
- 2012 Received a 40,000 € grant together with a colleague for an XP3D-UI research project.
- 2012 Received a 5,000 € grant from Emil Aaltonen foundation.
- 2011 Received a 7,000 € grant from Wihuri foundation.
- 2011 Received 20,000 € funding from Aalto University's Media Factory for my WeStyle-project.
- 2011 Received 13,000 € funding from Aalto University's Media Factory for my RUIS-project.
- 2010 Received a funded 4-year position in UCIT graduate school.
- 2005 3rd in Assembly'05 FastGFX competition.
- 2002 3rd in Assembly'02 Raytrace competition.
- 2001 1st in Assembly'01 Raytrace competition.

Assorted works

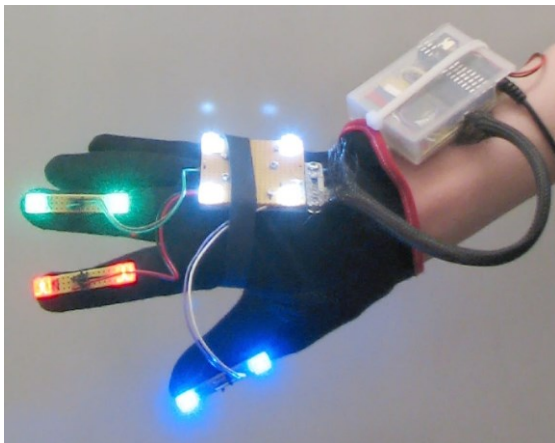
Reality-based User Interface System (RUIS), 2011, ongoing research project: a platform that eases the adoption of new interaction technology. The goal of RUIS is to enable novice programmers to easily prototype applications with novel user interfaces. Introduction to RUIS-platform and demonstration videos can be found at [RUIS website](#).



Picasso 3D Drawing, 2009, an attraction at Annantalo museum's Picasso exhibition: The user can literally draw 3D virtual shapes into air, and view his artwork with stereo-glasses. My optical motion tracker (see HandsOn project below) is at the heart of this application.



HandsOn, 2007-2009, joint project of HUT, TTY, TaiK: My role included research about motion tracking, implementation of an optical tracker that uses distributed computing, and building a marker glove for it.



3D Character Animation, 2008, an attraction at Science Center Heureka's exhibition: The user uses stereo-glasses to view a virtual character, which can be manipulated through a wand-like interaction device. Creation of short keystone animation sequences is possible. Early version of my optical tracker was used in this project to provide tracking information to the main application.



Virtual Dancer, 2006, a university course project. YouTube video available at <http://youtu.be/gDfd1c4E6v8>



Publications

- TM Takala, L Malmi, R Pugliese, T Takala
Empowering Students to Create Better Virtual Reality Applications: A Longitudinal Study of a VR Capstone Course
Informatics in Education-An International Journal, 15 (2), pp 287-317, 2016.
- FM Alonso, R Kajastila, TM Takala, M Matveinen, M Kytö, P Hämäläinen
Virtual ball catching performance in different camera views
Proceedings of the 20th International Academic Mindtrek Conference, ACM, 2016.
- TM Takala, P Hämäläinen, M Matveinen, T Simonen, J Takatalo
Enhancing Spatial Perception and User Experience in Video Games with Volumetric Shadows
Computer-Human Interaction: Cognitive Effects of Spatial Interaction, Learning, and Ability. Lecture Notes in Computer Science, Wyeld, Theodor; Calder, Paul; Shen, Haifeng (Eds.), Springer International Publishing, pp 91-113, 2015.
- TM Takala
RUIS – A Toolkit for Developing Virtual Reality Applications with Spatial Interaction
Proceedings of the 2nd symposium on Spatial user interaction (SUI'14), Honolulu, HI, USA, October 4–5, 2014.
- TM Takala, M Matveinen
Full Body Interaction in Virtual Reality with Affordable Hardware
Virtual Reality (VR), IEEE, Minneapolis, USA, March 29th-April 2nd, 2014.
- L Holsti, TM Takala, A Martikainen, R Kajastila, P Hämäläinen
Body-controlled trampoline training games based on computer vision
CHI '13 Extended Abstracts on Human Factors in Computing Systems, ACM, New York, 2013.
- TM Takala, M Mäkäräinen, P Hämäläinen
Immersive 3D modeling with Blender and off-the-shelf hardware
IEEE Symposium on 3D User Interfaces 2013, Orlando, USA, March 16th-17th, 2013.
- TM Takala, P Rauhamaa, T Takala
Survey of 3DUI Applications and Development Challenges
IEEE Symposium on 3D User Interfaces 2012, Orange County, USA, March 4th-5th, 2012.
- TM Takala, R Pugliese, P Rauhamaa, T Takala
Reality-based User Interface System (RUIS)
IEEE Symposium on 3D User Interfaces 2011, Singapore, March 19th-20th, 2011.
- J Kuusisto, TM Takala, O Korkalo, A Ellman, T Takala
Wearable haptic glove with McKibben actuators and optical tracking for virtual environments
Proceedings of the 4th INTUITION international conference and workshop on virtual reality and virtual environments, Athens, Greece, October 4-5, 2007.