

Igloovision's virtual cylinder and Sensoryx's digital gloves

- FIF seminar 11.11.2021
- Mika Nikander (Industrial Engineering)






TAMK is the second biggest UAS in Finland

approx 10 000 students
over 40 degree programmes
approx 700 employees

Strategic focus areas

We have outstanding expertise in our five chosen focus areas and collaborate closely with working life in all these fields.

- Energy-efficient and healthy built environments
- Developmental expertise in pedagogy
- New operational models for health care and social services
- Entrepreneurship and innovative business
- Intelligent machines and smart devices



*TAMK is joining forces with Tampere University.
Together these will constitute Finland's most diverse
higher education and research community.*

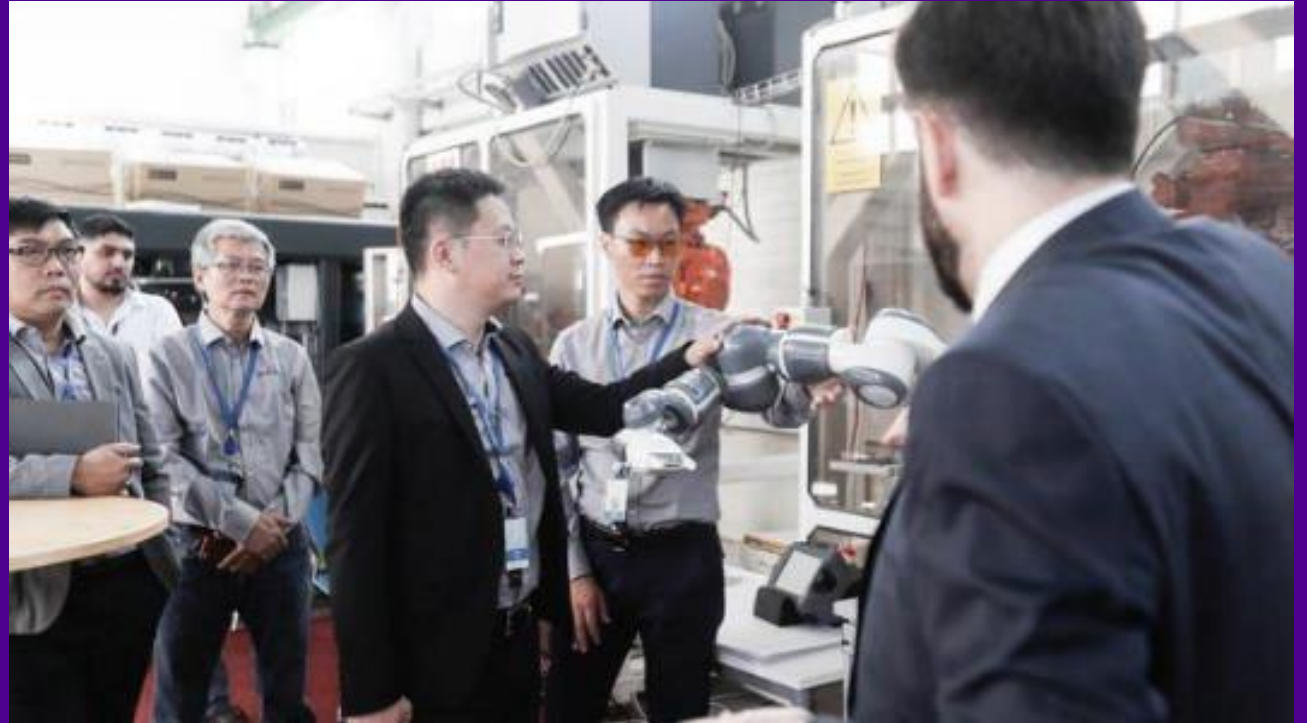
Tampere Universities

more than 30,000 students
nearly 5,000 employees

Tampere Universities
is a dynamic community of over
35,000 members!

Co-operation with business life

- Advisory Boards for study programmes
- Practical training periods for students
- Thesis and project work
- Research, development and innovation projects



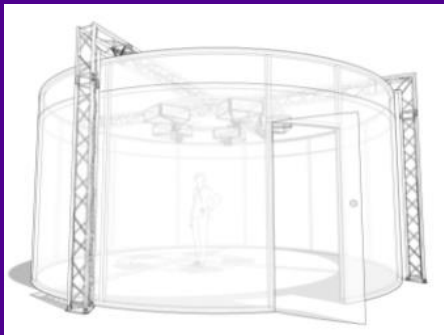
Virtual Lab for Social and Health Care

Igloovision's immersive space in TAMK

Igloo Vision Immersive 360 Cylinder which enables a shared 360 experience for up to 10 people at a time.

The cylinder comprises five full HD 3000-lumen projectors

<https://vimeo.com/507598329>



Our services for companies

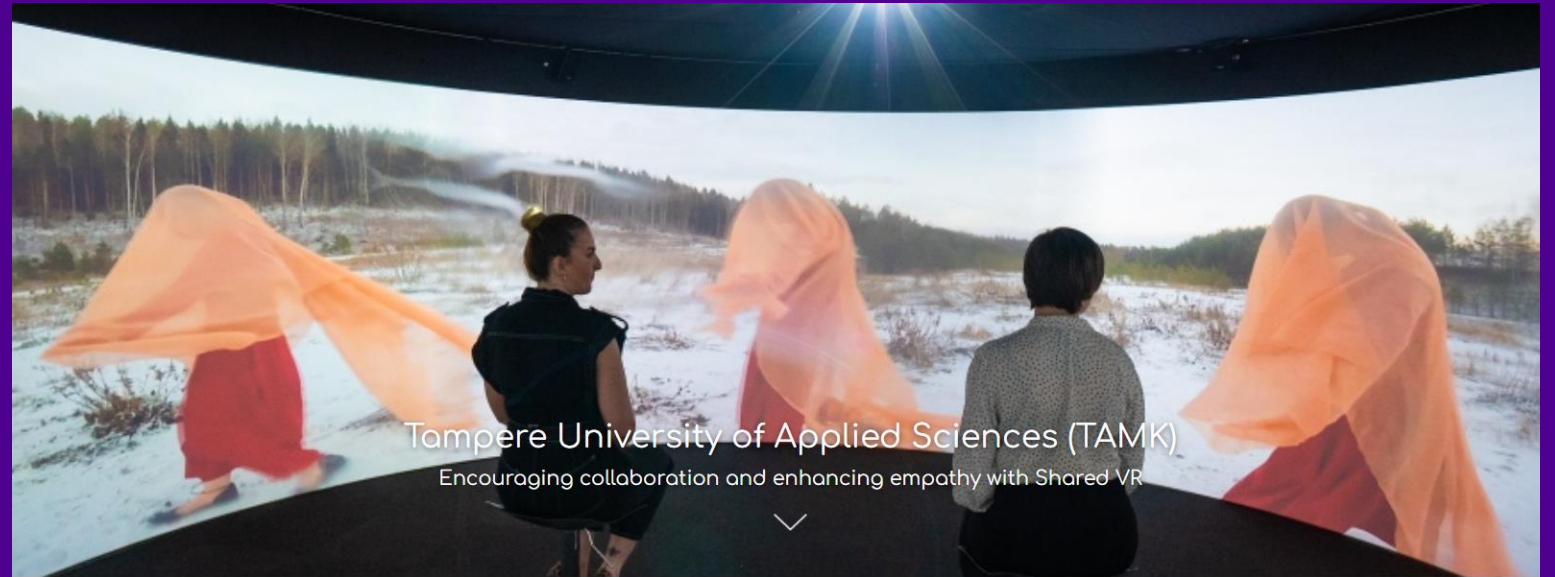
- pretesting at standardized Lab environment
- testing and product development in authentic environments, Living Labs
- references and pilot study cases
- pop-up space, showroom for technologies



This lab serves as an innovated co-creation platform for technology companies, service providers and TAMK students

<https://www.igloovision.com/case-studies/tamk-university>

To get started with using the cylinder, students from TAMK's Fine Art course created 360° videos to convey important stories and help others to understand difficult concepts, thus enhancing empathy



Teini Piibemaa, a student who created one of the videos, said "I know that with VR glasses I tend to get anxiety and motion sickness immediately which also makes it harder to recover after removing the glasses, so the cylinder can be a gentler option for people with the same issues. The cylinder also acts as a uniting piece, since you experience this with other people in the room. VR glasses place you into another reality where you don't see the people who physically share your space."

Sensoryx's VRFree Glove System

TAMK's setup:

VRFREE GLOVE SYSTEM – BUSINESS VERSION

VRFREE OBJECT TRACKER – SINGLE DIRECTIONAL

VRFREE OBJECT TRACKER – OMNI DIRECTIONAL

VRFREE 3D STYLUS (Advanced prototype)

Truly mobile, no stationary external references required

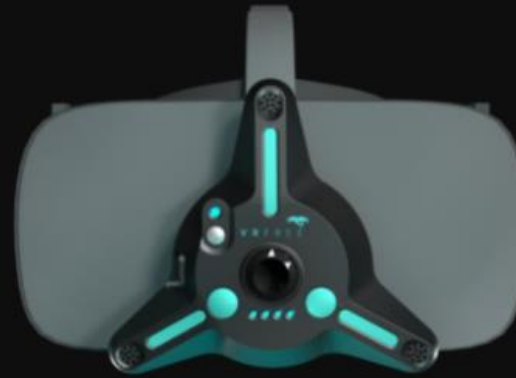
(Oculus Rift/Quest, HTC Vive/Pro/Focus, Valve Index, HP Reverb, WMR, Samsung Odyssey, Pimax etc)

[3D tracking for the Anyverse and the real world - YouTube](#)

TECHNOLOGY

The VRfree® system consists of a pair of lightweight, fingertipless gloves and a HMD module that you clip onto your headset (Oculus, HTC Vive, Windows Mixed Reality or similar).

The system is composed of multiple complementary sensor types that are fully integrated into the gloves and HMD mount. It allows users to fully track their hands and fingers in 3D space – without any other 3rd party tracking device. The system does not require any other external references like cameras or beacons.



VRfree Headmodule



VRfree gloves

Key technical features comprise high update frequency (120Hz, 8ms) from hand to HMD, truly mobile operation, high pin-point accuracy, unobtrusive lightweight form factor, tracking hands beyond your field of view, multi-user capability and long battery life. All of which makes for superior immersion of you, the user.

« There are VR gloves out there that track and capture your fingers but not their position in 3D. To track the position in 3D space users currently have to strap controllers to their arms which in turn are linked to a stationary device. That is not only inconvenient for players, it restricts their mobility. »

Implementation ideas

Training demos for the health care and industrial engineering made with game engines for Vive Pro2/Focus 3, Quest2, Varjo and Igloovision's virtual cylinder

[Training Demo Videos - VRfree® glove - intuitive VR interaction \(sensoryx.com\)](https://www.sensoryx.com)





Q&A



Person



Mika Nikander
Senior Lecturer

Industrial Engineering
+358505345710, mika.nikander@tuni.fi