

7a.025.TUT - Multimodal Data Integration in Intelligent Buildings

<https://www.youtube.com/watch?v=XNT0u7MRoKo&feature=youtu.be>

Attention Project PIs

Project - Team

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				Funded By: Business Finland

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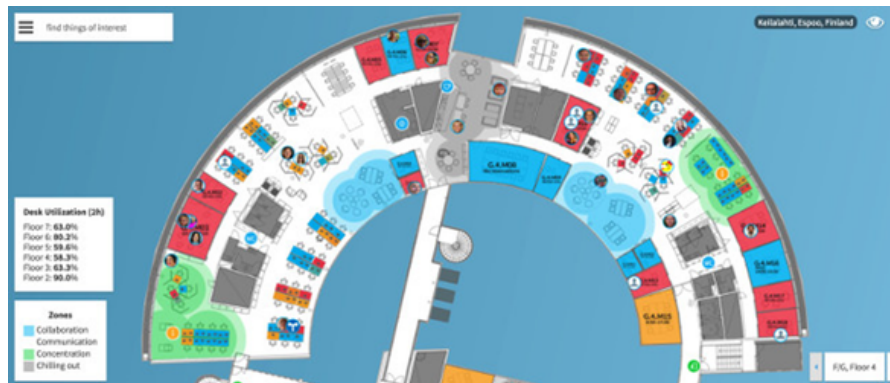
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Project - Summary

Data plays an essential role in future intelligent buildings. Different data are acquired from the building services equipment (e.g. CO2-meters or thermometers), from sensors installed to follow the usage (e.g. cameras or IoT), and from wearable sensors (e.g. mobile phones and activity bands). Privacy-preserving surveillance is a recent active research area. For instance, in a human monitoring system, which uses videos, we may need to hide the faces of people to keep them anonymous. In addition to face hiding, for some applications, some additional information may be needed to be concealed such as the identity of a patient in a health monitoring system. Moreover, the major difficulty in any monitoring system especially if it is a wireless sensor network system such as wireless video-surveillance systems is the energy efficiency problem. Because the sensors used in any long-term monitoring system can easily run out of battery. Another important research task is to learn how to combine efficiently data from different sources. Towards this goal, information from different sensors can be integrated using multimodal analysis. In this project, our aim is to build a monitoring/data collection system, which is privacy preserving and energy efficient and suitable for multimodal signals.

Project - Novelty of Approach

- We will tackle the problem in the dynamic settings using subspace learning methods
- We will develop a robust and discriminative learning method to tackle the noisy data



Project - Deliverables

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Deliverable	
1	Creating a data collection system which preserves both energy and privacy of users
2	Creating a multiclass encryption system upon (1), which satisfies joint compression and encryption with different levels of recovery quality
3	Creating a data hiding system for the data collected
4	Formulate a multimodal model for data analysis
5	Efficient implementation and integration to prototype

Project - Benefits to IAB

- Data fusion method for intelligent buildings
- Empathic Office
 - Find the right person, workstation
- Monitor the building and have better decision making
- Empathic Service
 - Better biometric system

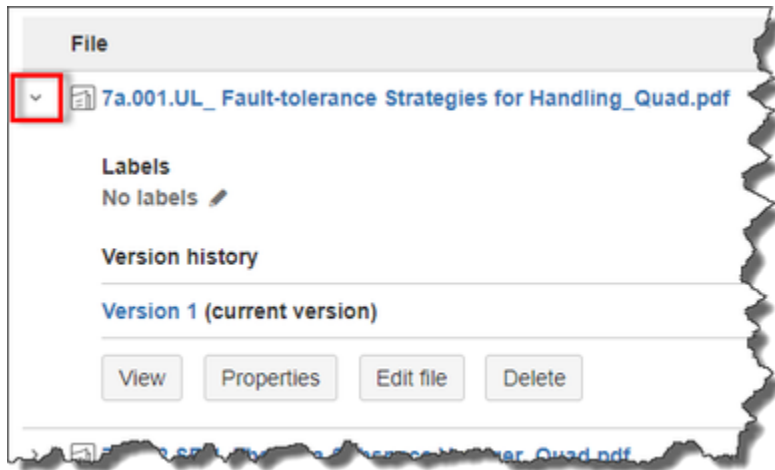
Project - Presentation Video (Spring 2018)

[Video Link \(6:28 minutes\)](#)

Project - Documents

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> 7a.025.TUT_Executive Summary.pdf	Feb 28, 2018 by Sally Johnson

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>  7a.025.TUT_Quad Chart_2018 Spring Meeting.pptx

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Project - Comments