

# A low-cost visual sensor network for elderly care

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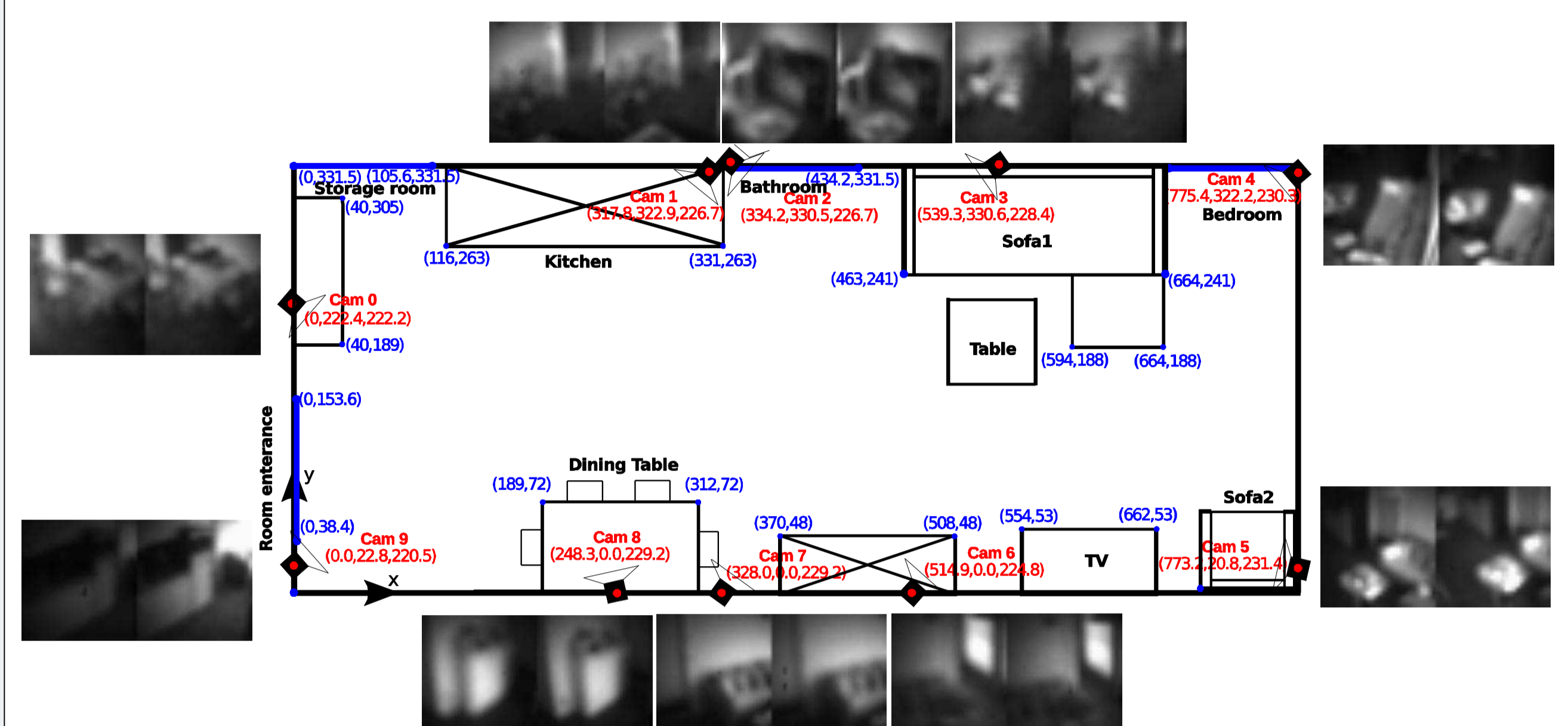
## 1. LittleSister

- e-Health care project: use technology to improve the quality of life of elderly people in their homes.
- In LittleSister we use a sensor network based on very low-resolution (900-pixel) visual sensors which enables monitoring of elderly people's health and safety at home, postponing institutionalized healthcare.

## 2. Approach

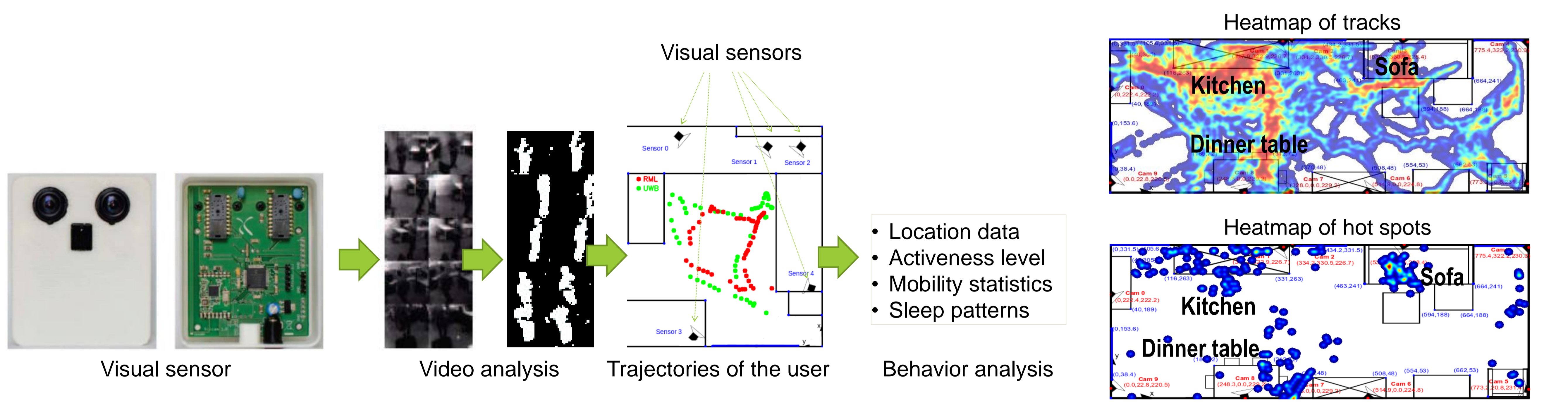
- Distributed processing algorithms running on microcontrollers and microcomputers analyze changes in motion and behavior patterns over time and detect possible emergency situations.

## 3. Data capture installation

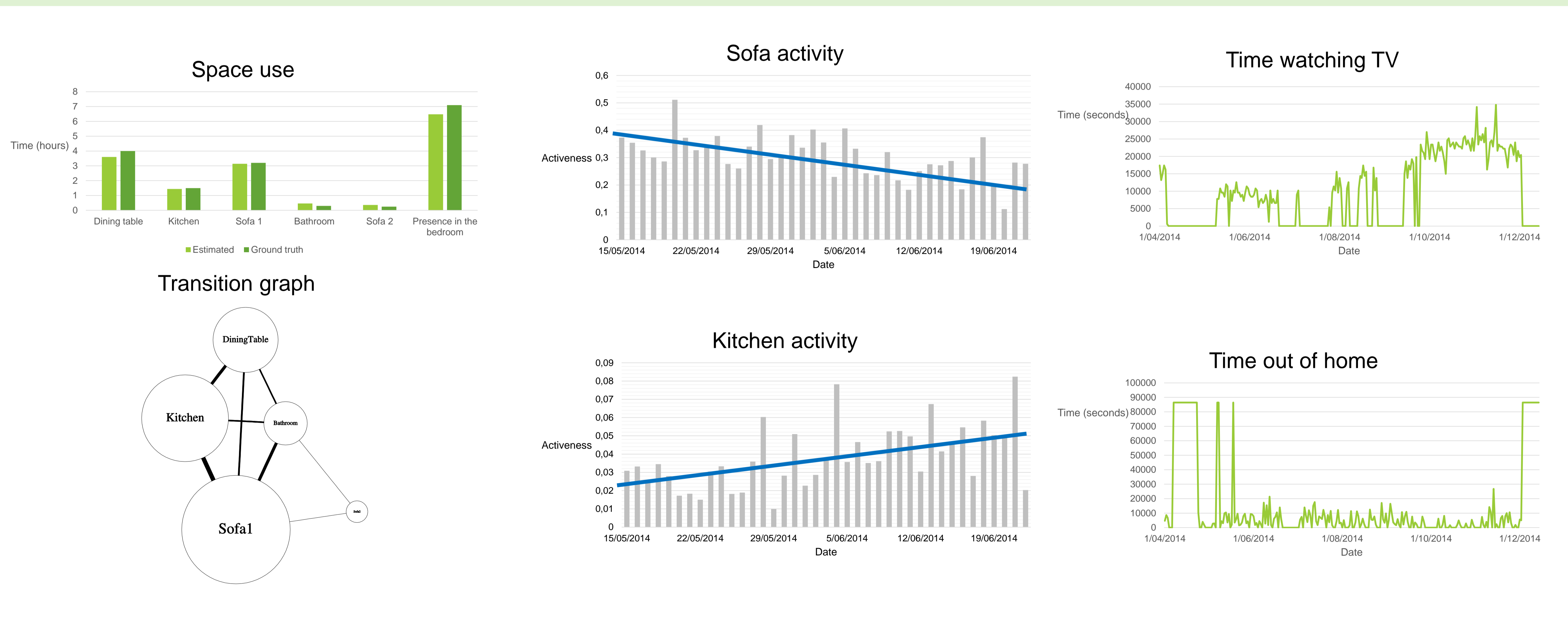


- Service flat — CM, Dendermonde
- Installation date: 01/03/2014
  - Capture duration: 12 months
- 1 inhabitant
- 83 years old
  - Diabetic
  - Decreased mobility

## 4. Distributed processing pipeline for automatic behavior analysis



## 5. Results of long-term behavioral change analysis



## 6. Conclusion

Despite significant technical challenges, low-resolution visual sensor networks are a viable solution to monitor people's behavior at home. They provide sufficiently rich information to detect health-related behavioral changes.

Selection of publications:

- F. Deboeverie, J. Hanca, R. Kleihorst, A. Munteanu, W. Philips, "A low-cost visual sensor network for elderly care", In SPIE Newsroom, 2014.
- N. Bo Bo, F. Deboeverie, M. Eldib, J. Guan, X. Xie, J. Niño, D. Van Haerenborgh, M. Slembrouck, S. Van de Velde, H. Steendam, P. Veelaert, R. Kleihorst, H. Aghajan, W. Philips, "Human Mobility Monitoring in Very Low Resolution Visual Sensor Network", In Sensors, vol. 14, no. 11, pp. 20800-20824, 2014.
- M. Eldib, N. Bo Bo, F. Deboeverie, X. Xie, H. Aghajan, W. Philips, "Behavior analysis for aging-in-place using similarity heatmaps", In 8th ACM/IEEE international conference on Distributed Smart Cameras, Proceedings, ACM/IEEE, pp. 34:1-34:6, 2014.