

# Camera Based Fall Detection

Many older persons fall and are not able to get up again unaided. Thirty to forty-five percent of the persons aged 65 or older living at home and more than half of the elders living in a nursing home fall at least once a year. One out of three up to one out of two older persons fall more than once every year (Milisen et al., 2004) (Tinetti, 2003). Ten to fifteen percent of those who fall, suffer severe injuries. The lack of timely aid can even lead to more severe complications (e.g. dehydration, pressure ulcers and even death). Although not all falls lead to physical injuries, psychological consequences are equally important, leading to fear of falling, losing self-confidence and fear of losing independence (Milisen et al., 2004) (Stalenhoef et al., 2002). Taking the ongoing ageing of the population into account, it is obvious that a manner to detect fall incidents is getting more and more important.

The existing technological detectors are mostly based on wearable sensors. However a market study of SeniorWatch (SeniorWatch, 2001) discovered that the sensors are not worn at all times. This happens for example when a person leaves the house, as the wireless system (connected to the sensor) can't reach the base station. Also during housekeeping tasks the sensors are removed, to prevent false alarms due to the needed sensitivity (Doughty, 2000). The devices are using battery power, so no alarm will be generated if the batteries are depleted. Furthermore they are sometimes removed when the person finds them uncomfortable. A fall occurring at that moment will not be detected.

A camera based system can overcome these disadvantages. The IWT-Tetra sponsored project FallCam has as goal to develop a prototype camera based fall detection system. The performance of the system will be verified on real-live data. For this, we have monitored 4 older persons at home for several months. During this period we have recorded 26 real fall incidents.

## REFERENCES

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