M. Gövercin, J. Spehr, S. Winkelbach, E. Steinhagen-Thiessen, F. Wahl. Visual fall detection system in home environments. Gerontechnology 2008; 7(2):114. Falls are one of the most important factors that threaten the independence of elderly in our civilization. Thirty per cent of individuals aged 65 and older fall at least one time per annum. This number rises looking at individuals >80 up to 80% p.a. In long term care setting, 50% of habitants experience at least one fall each year[1]. For 20% of elderly, a fall results in high-maintenance and admission to a nursing home. More than 20% of falls result in an injury including a high rate of fractures and even a significant mortality[2]. The cost of fall related injuries for individuals older than 65 y. crosses € 1 billion in Germany and $12.6 billion in USA[3]. Due to the increasing average age of our society we are looking for solutions that maintain the independence of elderly in home environments by preventing falls and fall associated immobility. Recent developments in Information and Communication Technologies (ICT), especially miniaturization and decreased costs, make them suitable for new approaches in the prevention and detection of falls and fall related injuries in home environments for a greater audience. Up to now evidence for the effectiveness of ICT is missing, so that broader distribution of solutions are yet lacking. **Method** In our feasibility study we want to show first appliance of a new visual fall detection system in a home like environment 'living lab'. The investigation includes different setups concerning age (4 probands with 30-65y) and appearance (e.g. dark and bright clothes). To develop a ubiquitous system, we changed environmental conditions like lightning and furniture in our "living lab". The fall prevention system includes a computer vision system for monitoring the activities of daily living. The system is based on cameras that are equipped with wide angle lenses which can acquire a complete view of a living space. The person is recognized within a camera image using a novel hybrid background subtraction technique, which uses temporal differencing and high-level knowledge to update the background model in an efficient manner. Thus even strong changes in the scene (illumination changes, open/closed doors) can be updated very fast. Activities and falls are recognized with a naive Bayes classifier. **Results** First results of the feasibility study show that the visual fall detection system is usable in detecting falls in home like environments of adults and elderly people. Moreover our method is suitable for detecting mobility impairment of the individual, so that we will be able to develop a continuous passive fall assessment tool for elderly people. Our results give reason to the assumption that computer vision techniques are one of the key technologies for future home care systems to maintain the independence in older individuals. Further investigation is needed to give answers to the question of usability in home environments and effectiveness of preventing falls including cost efficiency.

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