

# AUTONOMY AT HOME AND EARLY DIAGNOSIS IN ALZHEIMER'S DISEASE: UTILITY OF VIDEO INDEXING APPLIED TO CLINICAL ISSUES, THE IMMED PROJECT

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**Background:** With ageing of the population in the world, patients with Alzheimer's disease (AD) consequently increase. People suffering from this pathology show early modifications in their "activities of daily living". Those abilities modifications are part of the dementia diagnosis, but are often not reported by the patients or their families. Being able to capture these early signs of autonomy loss could be a way to diagnose earlier dementia and to prevent insecurity at home.

**Methods:** We first developed a wearable camera (shoulder mounted) to capture people's activity at home in a non-invasive manner. We then developed a video-indexing methodology to help physicians explore their patients' home-recorded video. This video indexing system requires video and audio analyses to automatically identify and index activities of interest

where insecurity or risks could be highlighted. Patients are recruited among the Bagatelle (Talence, France) Memory clinic department patients and are suffering from mild cognitive impairments or very mild AD.

**Results:** We met ten patients at home and we recorded one hour of daily activities for each. The data (video and questionnaires: Activities of Daily Living/Instrumental Activities of Daily Living) are now collected on an extended sample of people suffering from mild cognitive impairments and from very mild AD. We aimed at evaluating behavioral modifications and ability loss detection by comparing the subjects' self reported questionnaires and the video analyses.

**Conclusions:** This project is a successful collaboration between various fields of research. Here, technology is developed to be helpful in everyday challenges that people suffering from dementia of the Alzheimer type are faced with. The automation of the video indexing could be a great step forward in video analysis if it could reduce the time needed to embrace the patient's lifestream, helping in early diagnosis of dementia and becoming a very useful tool to keep individuals safe at home. In fact, many goals could be reached with such video analyses: an early diagnosis of dementia of the Alzheimer type, avoiding danger in home living and evaluating the progression of the disease or the effects of the various therapies (drug-therapy and others).

[http://www.alzheimersanddementia.com/article/S1552-5260\(11\)00833-8/fulltext](http://www.alzheimersanddementia.com/article/S1552-5260(11)00833-8/fulltext)