Title: *Using Virtual Reality in a Ambient Assisted Living Approach to better monitor, study and control Alzheimer's disease*

Scope:

Increasing age represents a significant risk for the development of brain disorders: it is estimated that nearly 20% of all persons older than 55 years suffer from some sort of mental disease. Dementia is one of the most common diseases in the elderly and a major cause of functional impairment and mortality, and is considered the major challenge of this century; due to the enormous burden of these pathologies impose on health care systems. Indeed, all recent European population-based studies on the prevalence of dementia with standardized diagnosis criteria show an exponential increase with age. The EURODEM study evidences crude prevalence rates for dementia varied between 5.9% (Italy, the Counselice study) and 9.4% (Netherlands, Rotterdam study) (Berr, Wancata & Ritchie, 2005) in subjects aged over 65.

It is important to Europe to offer a better life quality to people. It is also important to guarantee a better knowledge of brain diseases in ageing and associated human development. It is also relevant to focus the study of human and model systems, including interactions with factors such as environment, behavior and gender.

Assisted living residences or assisted living facilities (ALFs) provide supervision or assistance with activities of daily living (ADLs); coordination of services by outside health care providers; and monitoring of resident activities to help to ensure their health, safety, and well-being. Assistance may include the administration or supervision of medication, or personal care services provided by a trained staff person. Assisted living as it exists today emerged in the 1990's as an eldercare alternative on the continuum of care for people, normally seniors, who cannot live independently in a private residence, but who do not need the 24-hour medical care provided by a nursing home. Assisted living is a philosophy of care and services promoting independence and dignity.

The application of Virtual Reality (VR) technologies in the process of design and development of accessible solutions for elderly and people with any kind of disability is drastically increasing. Considering this relevant aspect, the goal of this project will be to study and evaluate how a VR solution in an AAL scenario might help to better monitor and control the evolution of the elderly and prevent the development of dementia (Alzheimer's disease) in people. The VR solution will be tailored taking into account the most advanced existing psychological methodologies that have been developed to minimize the impact of aging and prevent Alzheimer's disease evolution.

Supervisors:

- Prof. Dra. Elizabeth S. Carvalho, UM, Agoritmi Center and/or Department of Systems Information, ecarvalho@ccg.pt
- Prof. Dra. Adriana Sampaio, UM, Psicology School, adriana.sampaio@psi.uminho.pt

Proposing Institution:

Algoritmi Center, University of Minho, Guimarães.