

The Impact and Benefits of Innovative, Intelligent Assistive Lighting for The Cognitive Decline of the MCI Independent Seniors

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The PETAL Project - Personalizable assistive Ambient monitoring and Lighting, represents a unique and innovative solution that aims to reduce the cognitive decline among Mild Cognitive Impairment patients through an assisted ambient environment as well as the use of neurocognitive stimulation applications.

The functioning of the system is based on an online platform called "Rule Editor", that will act as both receptor for the information coming from the environment and transmitter of the information that will eventually materialize through the peripheral devices connected. One of the most important parts of the system is Assisted Lighting that not only regulates the colour temperature in regard with the circadian rhythm, for a thorough control of the melatonin secretion, but also offers the possibility to use light for guidance during the night, a particular light for each room or as a reminder for various actions – such as taking the medicine. The system will also integrate motion and proximity sensors that will continuously monitor the presence of the patient inside the home through a smartwatch that the elderly will wear. Using the same smartwatch, the platform can send warnings to different numbers prior

set in the case the patient falls. What is more, regarding the neurocognitive stimulation applications, the patients will perform exercises for maximum an hour, 3 times a week.

Using this platform, we can monitor changes that might appear in some particular contexts – aspects regarding the user, time, environment, etc. Thus, the necessary adjustments that should respond to the patient's requirements could be performed. The platform will allow the caregivers to personalize the way in which the platform as well as the Lighting System and other connected devices and appliances will act using a set of "rules".

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