



Augmented reality App to help assess spatial memory

DESCRIPTION OF THE TECHNOLOGY

This is the first augmented reality app based on SLAM to assess short-term spatial memory.

Short-term spatial memory is the ability to retain and remember the location of items for relatively short periods of time, and is the one that comes into play when remembering where we left the keys, a screwdriver or a pair of glasses, for example.

The application focuses on the sense of sight. The underlying idea is that the user sees a number of objects distributed in an environment and must remember their location. Specifically, a number of virtual objects are placed in an environment (number to be determined by the supervisor), the user goes through that environment and visualises it through the screen of a mobile device (Lenovo Phab 2 Pro). The screen displays the image captured of the real environment to which the virtual elements are superimposed.

The process consists of three phases:

1. Configuration:

The evaluator scans the real environment to be used, selects and places the virtual objects in the

desired positions, takes pictures of the same and sets times for each phase.

2. Adaptation

It is the first phase in which the user intervenes. The user must move around the environment observing it and paying attention to the details and virtual objects that appear. The user has a time limit to memorise the position of each of the objects in the environment. The time limit can be set up in the Configuration phase.

3. Assessment

In this phase, the user's spatial memory is assessed. The user must place the virtual objects in the positions previously memorised. The user has three attempts to place each object correctly.

There are many groups that can benefit from the application, from children to the elderly, people with orientation difficulties due to a disease with brain involvement (for example, acquired brain damage or dementia), etc. The app can be used as an assessment and training tool. In addition it can have other uses, such as a learning tool.



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MARKET APPLICATION SECTORS

- It can be used in patients with Alzheimer's, as a tool for the analysis and training of skills related to memory - as long as the patient is not at an advanced stage of the disease.
- It could be of great help for children, for the early identification of alterations related to spatial memory.
- It could also be used as a learning tool in children with learning difficulties, for example, in cases of autism.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- The device on which the app is installed recognises the environment in which it is being used and the place where the objects were placed.
- It can be used in the patient's home and customised with the desired objects, a truly huge advantage, since it adapts to the pace of life of each user.
- The complexity of the exercise to make it more motivating can be increased with small modifications. The evaluator selects the objects to be included in the actual environment, as well as their location and time limits.
- This application can be used for both training and evaluation.
- While it could also be used for learning purposes.

CURRENT STATE OF DEVELOPMENT

The software has been completely developed and is currently in use in research projects.

INTELLECTUAL PROPERTY RIGHTS

On October 10, 2018, Universitat Politècnica de València registered this software.

COLABORATION SOUGHT

UPV is searching for companies interested in establishing agreements to acquire the license of the software for its use and commercialization

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Image 2:



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