VADET. Visual Attention Diagnosis – Eye Tracking

Eye-tracking based system for diagnosing deficits related to attention

Contact information

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Technological Offers type

Technological solutions

Research and innovation areas

- Digital Technologies, Artificial Intelligence, Cybersecurity, 5G, Robotics
- Health and Wellbeing

ODS

Available from: 2020

Where?

Bioengineering and Telemedicine Group Center for Biomedical Technology

Keywords: | attention deficit | diagnosis

Brief description of the technology solution and the added value it provides

VADET offers an innovative solution for diagnosing attentional deficits, by integrating an eye-tracking device with a software, which has been specifically designed for that purpose by neuropsychologists. This facilitates to track the visual gaze of a person on a screen, letting us to know what takes his/her attention and which are the reasons for distractions. In short, the system provides to the therapists with objective information, relevant from a clinical point of view, that helps to improve the process for diagnosing the attentional deficits of patients with Acquired Brain Injury (ABI). Furthermore, the system would be easily adapted to be used in other groups of patients or pathologies, such as schizophrenia, cognitive decline in older adults, or Attention Deficit Hyperactivity

Disorder (ADHD) in childhood.

Description of the technological base

This solution consists of an eye-tracking device integrated with a software specifically designed by experts in neuropsychologists from the Institut Guttmann, for diagnosing attentional deficits.

The created software basically is based on a task that presents to the patient a set of screens with a couple of images. The patient has then to determine if the image is exactly the same or has any difference. The software includes an algorithm that automatically detect visual attention patterns, determining how the patient focuses his/her attention, which are the search strategies used, or what takes his/her attention. This information plus the number of correct answers, errors, and reaction time, provides to the neuropsychologist with objective information that helps to improve the diagnosing process, which will be in the end a key factor on the success of the treatment program designed for each patient.

“Visual attention monitoring in patients with Acquired Brain Injury by using eye-tracking techniques for improving the diagnosis process of attentional deficits”

Market demands

Cognitive Rehabilitation of patients with Acquired Brain Injury (ABI)

- The main causes of suffering an ABI are stroke and Traumatic Brain Injury (TBI).
- Every person suffering an ABI has a deficit on his/her cognitive capacities as a consequence. These deficits limit their autonomy and quality of life.
- The success of the rehabilitation program depends on the initial diagnosis.
- The initial diagnosis is still done by traditional face-to-face tests, being some parameters too subjective and dependent on the self experience of the professional.

According to the Institute Guttmann:

- In Spain: 54,500 new cases per year (24,000 from TBI; 30,500 from stroke).
- In Europe: 535,000 new cases per year (260,000 from TBI; 275,000 from stroke).
- In the USA: 470,000 new cases per year (155,000 from TBI; 315,000 from stroke).

“VADET has been developed thanks to the interdisciplinary collaboration between the Biomedical Engineering and Telemedicine Center of the UPM and the Institut Guttmann Hospital”

Competitive advantages

- Objective results, helping the professionals to better determine the attentional deficits of their patients.
- Efficiency is improved, reducing the time expended by therapists to the diagnosis process, with the corresponding decreasing of associated costs.
- Easier to deliver, improving the monitoring of the evolution of the patient’s progress.
- High flexibility and scalability: VADET would be easily adapted to other pathologies such as cognitive decline in elderly, schizophrenia, or Attention Deficit Hyperactivity Disorder (ADHD) in childhood.
- System fully developed and validated technically.
- Clinical evaluation of patients with VADET (ongoing).

Development stage

- Concept
- Research
- **Lab prototype**
- Industrial prototype
- Production

Contact

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