

Portable Eye-brain Pupillometric Diagnostic Device (PEBDI)

Functional sample documentation



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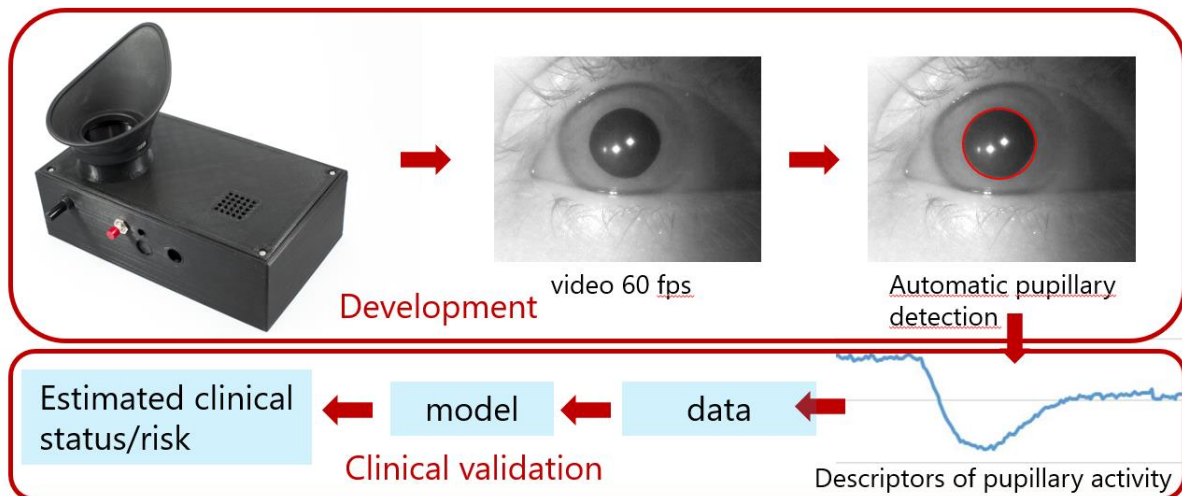
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Summary:

The PEBDI is a device for measurement and analysis of dynamic pupillometry, including an IR camera with light sources for navigation, video capture and stimulation, microcomputer (RaspberryPi) and integrated wireless connectivity (WiFi, LGE modem) and storage. The hardware is enclosed in a custom-designed 3D printed box with a novel eyepiece which assists in faster achieving and maintaining correct eye positioning for measurement. The near pocket-size device provides audio feedback and instructions regarding measurement progress or automatically detected improper eye positioning. Custom in-house developed software allows device control, automatic extraction of changes in pupillary diameter from the captured videos and data transmission to a server through an included LTE modem or WiFi network.



Based on the results of pilot studies performed at NUDZ, the measured dynamic pupillary parameters can be used as an objective biomarker of clinical state in severe mental illnesses, including psychotic and mood disorders. Together with the ability to be used independently at patients' home and automatic data transfer to a central database, the device is designed for remote diagnostics and monitoring of the clinical state. Further clinical validation is ongoing.

Application area:

The device enables remote diagnosis of clinical conditions in severe psychiatric disorders. As such, it opens up entirely new possibilities for preventing hospital admissions and optimising treatment, leading to both improvements in patients' lives and savings in care costs and costs associated with loss of ability to work.