

Physics

Hypoglycemia Indicator Based on Multimodal Biosignals

Biomedical Engineering



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2007-2012: MSc in Biomedical Engineering at FCT/UNL

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Objectives

The main objectives are to compare the continuous biosignals measurements occurred by changes on blood glucose levels in diabetic patients, in order to develop an early warning of hypoglycemia.

Methodology

Use non-invasive sensors to compare the biosignals responses with the blood sugar level in diabetic patients to create a new indicator of hypoglycemia. The sensors will record continuous data from the electrodermal activity (EDA), electrical impulses from muscular fiber activation in the heart (ECG) and the blood volume pulse (BVP). The study will require advanced multimodal signal processing and machine learning frameworks for the discovery of the new hypoglycemia indicator.

Expected Results

Produce new research outcomes that will bring accurate, non-invasive, easy to administer, with high sensitivity, specificity and cost-effective to access and early alert the glucose level in the blood.

Publication: A. Pimentel, H. Gamboa, S. Cunha, A. Correia. Algorithm for testing behavioural phenotypes in a Zebrafish model of Parkinson's Disease. Proceedings of Biosignals - 6th International Conference on Bio-Inspired and Signal Processing (BIOSIGNALS 2013), Barcelona, Spain, 2013.

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