A deep learning approach to adherence detection for type 2 diabetics - DTU Orbit (17/11/2019)

A deep learning approach to adherence detection for type 2 diabetics
Diabetes has become one of the biggest health problems in the world. In this context, adherence to insulin treatment is essential in order to avoid life-threatening complications. In this pilot study, a novel adherence detection algorithm using Deep Learning (DL) approaches was developed for type 2 diabetes (T2D) patients, based on simulated Continuous Glucose Monitoring (CGM) signals. A large and diverse amount of CGM signals were simulated for T2D patients using a T2D adapted version of the Medtronic Virtual Patient (MVP) model for T1D. By using these signals, different classification algorithms were compared using a comprehensive grid search. We contrast a standard logistic regression baseline to Multi-Layer Perceptrons (MLPs) and Convolutional Neural Networks (CNNs). The best classification performance with an average accuracy of 77.5% was achieved with CNN. Hence, this indicates the potential of DL, when considering adherence detection systems for T2D patients.

General information
Publication status: Published
Contributors: Mohebbi, A., Aradóttir, T. B., Johansen, A. R., Bengtsson, H., Fraccaro, M., Mørup, M.
Pages: 2896-9
Publication date: 2017

Host publication information
Title of host publication: Proceedings of 2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Publisher: IEEE
ISBN (Print): 978-1-5090-2809-2
DOI: 10.1109/EMBC.2017.8037462
Source: FindIt
Source ID: 2389514286
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review