Università degli Studi di Pavia
Dipartimento di Ingegneria Civile e Architettura

SEMINARIO

Current trends in CGM sensor technologies: toward more accurate factory-calibrated systems

Daily management of diabetes by patients relies on the capability of correctly measuring glucose concentration levels in the blood by using suitable sensors. In recent years, glucose monitoring has been revolutionized by the development of continuous glucose monitoring (CGM) sensors, wearable devices that provide real-time measurements of glucose concentration. Most of the commercialized CGM systems employ a minimally invasive electrochemical sensor, usually placed in the subcutaneous tissue, which measures an electrical current signal generated by the glucose-oxidase reaction. This signal of electrical nature is in real-time converted to glucose concentration levels through a calibration process. On the one hand, frequent calibrations are required to guarantee a good senor accuracy, which is a fundamental requirement for several applications, e.g., the artificial pancreas. On the other, each calibration requires the patients to add uncomfortable extra actions to the many already needed in the routine of diabetes management. Recent literature has shown that it is possible to match these apparently opposite needs by using suitable modelling techniques and the Bayesian estimation theory.

In this talk, I will give an excursus of the current industrial trends in CGM sensor technologies. Then, I will discuss some recent research improvements concerning the application of the Bayesian strategy to the calibration of current and next generation CGM systems.

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