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Név: Dr. Máté Siket
Assistant Professor
Institute of Biomaterials and Applied Artificial Intelligence

E-mail: siket.mate@nik.uni-obuda.hu

Title: Modeling and simulating uncertainty in type 1 diabetes

ABSTRACT

Representing blood glucose dynamics from real-world data is challenging for multiple reasons. There is an inherent variability in physiology, self-reported events can be missing or inaccurate, glucose response also affected by numerous unmodeled phenomena. We modeled and estimated variability in physiology on multiple levels, and taken into account uncertainty in self-reported events such as insulin injections, meal intakes, and physical activity. We developed a multilevel Bayesian model which was fitted using stochastic variational inference on real-world data (500, 24h-long samples from 10 patients on multiple daily injections).