

## عنوان مقاله:

Optimal Type-2 Fuzzy Control for Regulation of Glucose in Diabetic Patients

## محل انتشار:

کنفرانس ملی رویکردهای نوین در صنعت برق (سال: 1396)

تعداد صفحات اصل مقاله: 15

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## خلاصه مقاله:

Diabetes is a chronic disease which causes high level of sugar in the blood. Diabetes mellitus can be caused by too little insulin, resistance to insulin, or both. Although in research activities is tried to lower blood glucose level in the quickest possible time but there are some limitation in the amount of insulin injection. Unlike other previous papers where the simple model of Bergman is used, in this paper, a detailed model of glucose-insulin regulation system, which is a nonlinear delayed differential model, is used. The goal of this paper is to force the glucose profile of patient to follow a healthy person through minimum infused insulin. To achieve the best tracking with minimum insulin use, an optimal type-2 fuzzy controller is proposed for type 1 diabetic patients. The proposed fuzzy controller is optimized by a novel heuristic algorithm namely Particle Swarm Optimization with random inertia Weight (RNW-PSO). To verify the robust performance of the proposed controller, a group of four tests is applied. Insensitive to multiple meal disturbances, high accuracy and superior robustness to model parameter uncertainties are the key aspects of proposed method.

## کلمات کلیدی:

Random Inertia Weight Particle Swarm Optimization (RNW-PSO), Diabetes, Fuzzy Logic Control, Wang Model

## لینک ثابت مقاله در پایگاه سیویلیکا:

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