## عنوان مقاله:
Optimal intelligent control for glucose regulation

## محل انتشار:
مجله مکانیک سازه ها و شاره ها, دوره 2, شماره 3 (سال: 1391)

تعداد صفحات اصل مقاله: 9

## نویسندگان:
M. Siahi - *Dept. of Electrical Engineering, Islamic Azad University of Garmsar*

A Alfi - *Assist. Prof., Faculty of Electrical and Robotic Engineering, Shahrood University of Technology*

D Nazari Maryamabadi - *Dept. of Electrical Engineering, Islamic Azad University of Garmsar*

M.H Khooban - *Dept. of Electrical Engineering, Islamic Azad University of Garmsar*

## خلاصه مقاله:
This paper introduces a novel control methodology based on fuzzy controller for a glucose-insulin regulatory system of type I diabetes patient. First, in order to incorporate knowledge about patient treatment, a fuzzy logic controller is employed for regulating the gains of the basis Proportional-Integral (PI) as a self-tuning controller. Then, to overcome the key drawback of fuzzy logic controller, i.e., the lack of systematic methods to define fuzzy rules and fuzzy membership functions, fuzzy PI controller are optimized by Particle Swarm Optimization with Linearly Decreasing Weight (LDW-PSO) algorithm, which is a novel evolutionary computation technique. Simulation results show the effectiveness of the proposed optimal fuzzy PI controller in terms of accuracy and time margin.

## کلمات کلیدی:
Type 1 diabetes; Bergman model; Fuzzy logic control; Particle swarm optimization; PI controller