Abstract

In the recent years improvement in the patient's quality-of-life has become a focal point in the development of new and optimized techniques for electro stimulation of the heart. In an effort to
make such improvements the present work describes the design of a control system for regulating the Heart Rate (HR) for pacemaker in an efficient way. The overall control system to be developed, in this work is considered to be composed of cardiovascular system duly energized by an intelligent pacemaker system as operated in a closed loop manner with unity negative gain in the feedback path. A conventional controller based on Proportional, Integral and Derivative (PID) is designed with the help of Zeigler-Nichols, Tyreus-Luyben and Relay tunings methods. In addition, HR controller is also designed using fuzzy controller to improve response parameters. By competitive study of results of fuzzy and PID controller it is found that the overall response of fuzzy logic based controller is better than the conventional PID controller.

References

Intelligent Heart Rate Controller For Cardiac Pacemaker

- Ross T. J., 2005, Fuzzy logic with engineering Application, John Wiley and Sons, Inc.

Index Terms

Computer Science
Control Systems

Keywords

Pacemaker
Fuzzy Logic
PID
Heart
Rate Controller
Heart Rate
Cardiovascular System