

عنوان مقاله:

Analytical fuzzy solution of the ventricular pressure equation and prediction of the blood pressure

محل انتشار:

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خلاصه مقاله:

The cardiovascular system is an extremely intelligent and dynamic system which adjusts its performance depending on the individual's physical and environmental conditions. Some of these physical and environmental conditions may create slight disruptions in the cardiovascular system leading to a variety of diseases. Since prevention has always been preferable to treatment, this paper examined the Instantaneous Pressure-Volume Relation (IPVR) and also the pressure of the artery root. Fuzzy mathematics as a powerful tool is used to evaluate and predict the status of an individual's blood pressure. The arterial pressure is modeled as a first-order fuzzy differential equation and an analytical solution for this equation is obtained and an example shows the behavior of the solution. The risk factors using fuzzy rules are assessed, which help diagnose the status of an individual's blood pressure. Using the outcome by drawing the individual's attention to these risk factors, the individual's health is improved. Moreover, in this study, adaptive neuro-fuzzy inference system (ANFIS) models are evaluated to predict the status of an individual's blood pressure on the basis of the inputs.

کلمات کلیدی:

Fuzzy instant pressure volume, Generalized Hukuhara difference, Generalized Hukuhara differentiable, Characterization theorem, Fuzzy output blood ow theorem, Fuzzy blood flow back Theorem, Fuzzy model of arterial pressure, Adaptive Neuro-Fuzzy Inference System

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