

Object-Oriented Programming for Modeling and Simulation of Systems in Physiology

Authors : J. Fernandez de Canete

Abstract : Object-oriented modeling is spreading in the current simulation of physiological systems through the use of the individual components of the model and its interconnections to define the underlying dynamic equations. In this paper, we describe the use of both the SIMSCAPE and MODELICA simulation environments in the object-oriented modeling of the closed-loop cardiovascular system. The performance of the controlled system was analyzed by simulation in light of the existing hypothesis and validation tests previously performed with physiological data. The described approach represents a valuable tool in the teaching of physiology for graduate medical students.

Keywords : object-oriented modeling, SIMSCAPE simulation language, MODELICA simulation language, cardiovascular system

Conference Title : ICMBE 2015 : International Conference on Medical and Biomedical Engineering

Conference Location : London, United Kingdom

Conference Dates : April 24-25, 2015