

GUI Design of Mathematical Model of Cardiovascular-Respiratory System

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Abstract : This paper presents the design of Graphic User Interface (GUI) in Matlab as interaction tool between human and machine. The designed GUI can be used by medical doctors and other experts particularly the physiologists. Matlab packages and estimated parameters of the mathematical model of cardiovascular-respiratory system developed in Rwandan context are used in GUI. The ordinary differential equations (ODE's) govern a mathematical model in designing GUI in Matlab and a window that sets model estimated parameters and the measured parameters by any user. For healthy subject, these measured parameters include heart rate, systolic blood and diastolic blood pressure, partial pressure of oxygen in arterial blood, partial pressure of carbon dioxide in arterial blood, concentration of bound and dissolved oxygen in the mixed venous blood entering the lungs, and concentration of bound and dissolved carbon dioxide in the mixed venous blood entering the lungs. The results of numerical test give a consistent appearance as empirically known results.

Keywords : Graphic User Interface, mathematical model, cardiovascur-respiratory system, walking physical activity, blood pressure, oxygen

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