A technique to improve the displaying quality of skin deformation caused by external force

Nguyen Duc Hoang*, Do Nang Toan**, Nguyen Tuan Minh*
* Posts and Telecommunications Institute of Technology, Vietnam
** Institute of Information Technology, Vietnam Academy of Science and Technology, Vietnam

hoangnd@ptit.edu.vn, donangtoan@gmail.com, minhnt@ptit.edu.vn

Abstract—This article continues the research on simulation of preclinical medical practice started by Do Nang Toan and Nguyen Duc Hoang. In previous research, a technique to present colour of the human skin was introduced and in this research we continue improve the displaying quality of skin deformation caused by external force. Pressing on the skin and observing changes in capillary refill time (CRT) of human skin to evaluate the patient’s health though terms of blood pressure, heart rate, etc. is an indispensable operation in medical examination and treatment. This article mentions a technique to improve the detail of the deformation of the shape of human skin affected by external force without increasing the detail of the entire object. The proposed technique is applied on a 3D model simulating emergency medical practice of children in Vietnam and proved to be effective in displaying the deformation of the shape of human skin caused by the external force.

Keyword—Skin simulation, automatically tris generated, limited interactive area, virtual reality

Nguyen Duc Hoang is researcher at the Posts and Telecommunications Institute of Technology, Vietnam. He received BSc. Degree in Telecommunications in 2013 from Posts and Telecommunications Institute of Technology. His main research interests are Virtual reality, simulation, 3D graphics and Video game.

Do Nang Toan is an Associate Professor at the Institute of Information Technology - Vietnam Academy of Science and Technology. He received BSc. Degree in Applied Mathematics and Informatics in 1990 from Hanoi University, and PhD in Computer Science in 2001 from Vietnam Academy of Science and Technology. His main research interests are Pattern recognition, Image processing and Virtual reality.

Nguyen Tuan Minh is researcher at the Posts and Telecommunications Institute of Technology, Vietnam. He received Engineer Degree in Information technology in 2019 from Posts and Telecommunications Institute of Technology. His main research interests are Virtual reality, Simulation and machine learning.