Penerapan Fuzzy Logic untuk Modulasi Kecepatan NPC Sepeda Virtual Trainer pada Simulator VRAC

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ABSTRACT

The type of disease that contributes to the highest mortality rate in the Non-Communicable Diseases (NCD) group is cardiovascular disease, one of which is stroke. Diseases such as stroke can be prevented before or after they occur again by reducing risk factors, one of which is by practicing body movements. Therefore, a static cycling virtual reality system was developed to improve body balance for post-stroke sufferers. The development of static bicycle virtual reality games cannot be separated from the need for Non Player Characters (NPC) that are present in the form of autovehicles as trainers for players. The NPC as a trainer will guide the player during the simulation process by adjusting the speed according to the player's ability. Developing a complex AI algorithm, of course, takes a long time and expensive resources. The problems in NPC speed modulation can be solved by using machine learning, one of which is using fuzzy logic. The purpose of implementing NPCs as Trainers in this study is to create a technology or machine that can facilitate humans, this goal is obtained based on the conditions of this modern era where technology has developed rapidly. Fuzzy logic in this study uses two classes for input and one class for output whose training data are obtained from players. Input distance and heartrate from the player can make the NPC adjust the speed of the player. The test results show that the results of the NPC speed of Fuzzy Logic are able to make players do exercises stably.

Keywords : stroke disease, fuzzy logic, simulation games, NPC