A Comparison on the Performance of Crossover Techniques in Video Game

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This paper describes the performance of four crossover operators used in evolving the required controllers in a video game. The crossover operators used in this research are the two-point crossover, the uniform crossover, the N-point crossover, and the single-point crossover. The performance of these crossover methods were tested using Infinite Mario Bros game. This video game was chosen due to the dynamicity and complexity of the game. This paper also presents a newly designed nondeterministic based Finite State Machine (FSM) method. The Mario character uses the proposed FSM as its strategy in the game. The proposed FSM is then optimized using a modified Genetic Algorithm (GA). The results showed that the required controllers were generated successfully using the proposed method. The results also showed that the N-point crossover performed well compared to the uniform crossover, the two-point crossover and the single-point crossover methods.