Self-Synthesized Controllers for Tower Defense Game using Genetic Programming

Abstrak

In this paper, we describe the results of implementing Genetic Programming (GP) using two different Artificial Neural Networks (ANN) topologies in a customized Tower Defense (TD) games. The ANNs used are (1) Feed-forward Neural Network (FFNN) and (2) Elman-Recurrent Neural Network (ERNN). TD game is one of the strategy game genres. Players are required to build towers in order to prevent the creeps from reaching their bases. Lives will be deducted if any creeps manage to reach the base. In this research, a map will be designed. The AI method used will self-synthesize and analyze the level of difficulty of the designed map. The GP acts as a tuner of the weights in ANNs. The ANNs will act as players to block the creeps from reaching the base. The map will then be evaluated by the ANNs in the testing phase. Our findings showed that GP works well with ERNN compared to GP with FFNN.