A Systematic Exploration of Mutation Space in a Hybridized Interactive Evolutionary Programming for Mobile Game Programming

Abstract

In this study, a systematic exploration of mutation space in interactive evolutionary programming was conducted to investigate the effects of the game synthesis process using different mutation rates. Evolutionary programming is the core Evolutionary Algorithm (EA) used in this study where it is hybridized with Interactive Evolutionary Algorithm (IEA) to generate different rulesets that was played on a custom arcade-type mobile game. The experiment was initially conducted by utilizing different mutation rates of 10, 20, 30, 40, 50, 60, 70, 80, and 90 percent. From the optimization results obtained, the single best individual was selected from each mutation rate to further analyze its quality. It was discovered that higher mutation rates were able to yield faster and better solutions and lower mutation rates generally yielded results that were below average.