Abstract: The programming of artificial intelligences is an important and often quite a lengthy part of game development, which greatly contributes to the overall end quality of the game. With the rise of machine learning technologies comes the question of if these technologies have their place in game development. In this thesis we focus on genetic algorithms and their use potential over hard-coded artificial intelligences for turn-based strategies. We'll design a game where the artificial intelligence will learn, then we will implement a genetic algorithm which optimizes the artificial intelligences based on a matrix and we'll analyse the results of two separate runs of this algorithm and pose hypotheses based on the results while examining potential future work.