

This thesis deals with agent behavior evolution for the environment of a real computer game using evolutionary algorithms. The game Unreal Tournament 2004 was chosen, due to its ease of use for creating agents manually with the Pogamut suite of tools. As a decision making structure for the agents yaPOSH reactive plans were used. Due to the demanding needs on the hardware and time a real computer game is not considered to be very suitable for artificial evolution. To overcome this fact a light-weighted environment LightEnv, that simulates only those aspects that are important for agent evolution, was created. The evolution was based on genetic programming modified for use with yaPOSH reactive plans. The evolved agent behavior for death match and team death match game scenarios exceeded the preprogrammed ones and was successfully transferred to Unreal Tournament 2004 environment. In the team death match scenario an interesting behavior that utilizes agent communication was evolved.