

Homogeneous robotic swarms are usually controlled by a manually created program. This thesis studies an alternative approach, the possibilities of creating control programs by means of a technique inspired by biological evolution called genetic programming. A simulator of a simple 2D environment was created for this purpose. This allows us to observe and examine newly created control programs for virtual homogeneous robotic swarm. The ability of genetic programming to create control programs is examined on three different scenarios in which the robotic swarm should deal with three different tasks. The thesis also contains the comparison of genetic programming with a technique that use neural network and evolutionary strategies.