

Validation Framework

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Expected Results

Using Neural nets and genetic algorithms a system of intelligent agents will be created to move through an obstacle course. This will be achieved by experimenting with neural net technologies with the NEAT framework as the base for the code and experiments.

Test Bed

Using Infinite Mario as testing platform, agents will be run through different types of Mario levels. These levels will test the agents ability to navigate obstacles in a 2d environment. Premade and generated levels will be used to test and train the agents to observe each affect.

Experiments

Agents will be trained through certain levels and tested on others. Two groups of agents will be tested several times: a control population of NEAT agents and then a population of modified NEAT agents. For each population and run the agents will be measured on their ability to perform and train on certain level using a heuristic. For training specifically, the agents will be tested on their ability to train by recording the number of generations to reach a certain score.

Tests

- Train agents over a series of prebuilt levels and record number of generations to train.
- Test trained agents from sets of training levels on a random level and record scores for individual in the population
- Train agents and score them on the same set of random levels

Validation of Intelligence

Agents will be shown performing on certain levels to test subjects and asked whether they are performing intelligently. Agents will be assign a binary intelligent or dumb.