

# SapioGo Project Analysis

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June 8, 2004

## 1 Analysis

### 1.1 Performance: GNU Go

As SapioGo played GNU Go, its average score increased as each generation was completed and bred to the next generation, although the increase was usually fractions of points. Both our 5x5 strain and our 9x9 strain showed the same increases to the average score. As SapioGo begins to develop better strategies would not expect clusters of wins right away, we would expect a small amount of wins to occur every couple generations before SapioGo begins to play consistently.

The 5x5 game was able to win against GNU Go. SapioGo currently is winning around 1 out of 20,000 games on a 5x5 board, or 1 out of 75 generations, thus is not has begun to win consistently. We do expect the number of wins to increase as well as the wins per game to increase. As long as the average score continues to increase as a pseudo-linear rate, (as it is now) we are guaranteed more wins.

Both species of boards showed a slow emergence of strategies. The first strategy shown was SapioGo's beginning set of generations favored a random opening move, as smarter generations were bred it became more and more intelligent as it positioned its opening move toward the center of the board. The second strategy that emerged was SapioGo originally favored random placement of stones on the board, the strategy that emerged was the gnugo began to favor placing its stone in groups near stones of its own color, thus making a stronger group together.