

CSE 91 HW3 Due January 28th

On Tuesday, Professor Dasgupta lectured about how Artificial Intelligence programs can be built to seem intelligent through the use of simple statistics that detect patterns in data. One of the programs he mentioned was the “Mind Reader” A.I. game developed by some students at UCSD. You can find the program at this web address: <http://seed.ucsd.edu/~mindreader> . The Mind Reader tries to predict whether the user will enter a 0 or 1 in order to win a race with the user.

- 1) First try to race the computer. Were you able to beat it? How good is the mind reader program? What strategies seem to work better than others?
- 2) Enter the same number into the program repeatedly. How many button presses does it take for the program to recognize this strategy and start guessing perfectly.
- 3) Presumably the Mind Reader would win no more than 50% of the games against a truly random player since there would be no learnable patterns in the data. Here's a pseudo-random sequence I generated with a short Python script: [1,0,0,1,0,0,1,0,1,0,1]. You can also generate a random sequence by flipping a coin and recording 0 for heads and 1 for tails. If you enter a short random sequence into the program, how many repetitions does it take for the program to guess it perfectly?

Extra credit: how long of a random sequence do you need so that the Mind Reader cannot recognize it perfectly over the course of a game?

Appendix: Here is my script for generating a random sequence if you want to use it:

```
import random
a = []
for i in range(100):
    a.append(random.choice([0,1]))
print a
```