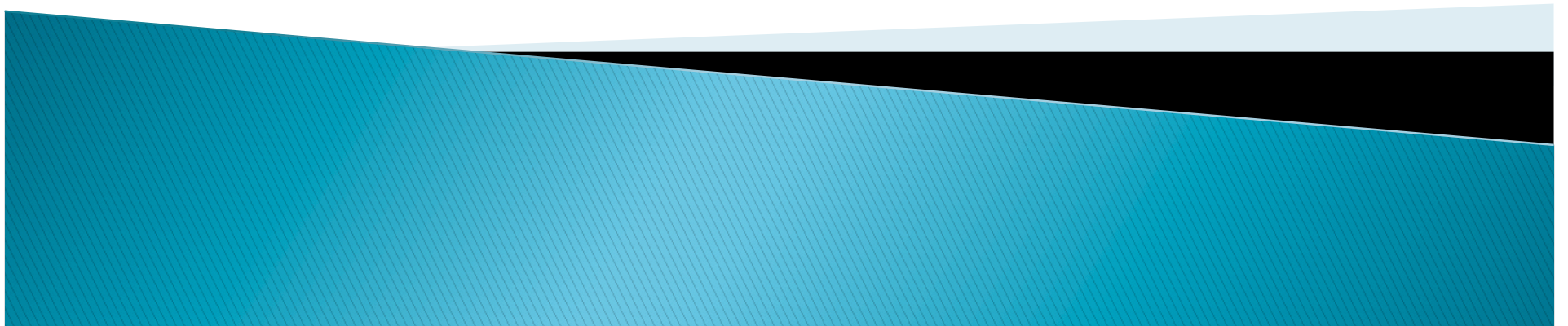


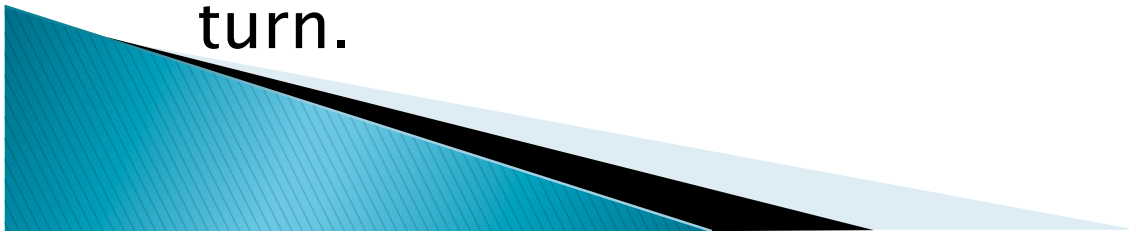
Evaluation of an Evolving Neural Networks Algorithm Applied to Technical Object Control

By Thomas Sullivan



What's been going on?

- ▶ Updating the app to control the rover.
- ▶ Adding the sensors to the rover.
- ▶ 2 sensors, both in front.
- ▶ Each sensor reads in a distance, then averages the 2 distance readings.
- ▶ Compares the average from the sensors to a pre-determined distance in order to know when to turn.



Results so far:

- ▶ 1 obstacle:
 - The rover detected the obstacle, turned, then stopped.
 - The rover detected the obstacle, turned, then continued forward on that path without obstacle detection.
- ▶ 2 obstacles:
 - The rover moves around the first, detects the second, moves around it and continues on that path.
- ▶ Free roam:
 - Have the rover move around the room with no desired path but avoids anything in its way.



The server:

Course: 94

Desired Course: 95

Duration: 15

Ratio:

IP address: 10.102.161.228

Speed

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300

Steer

-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90

Start Course PID

Remote

Manual

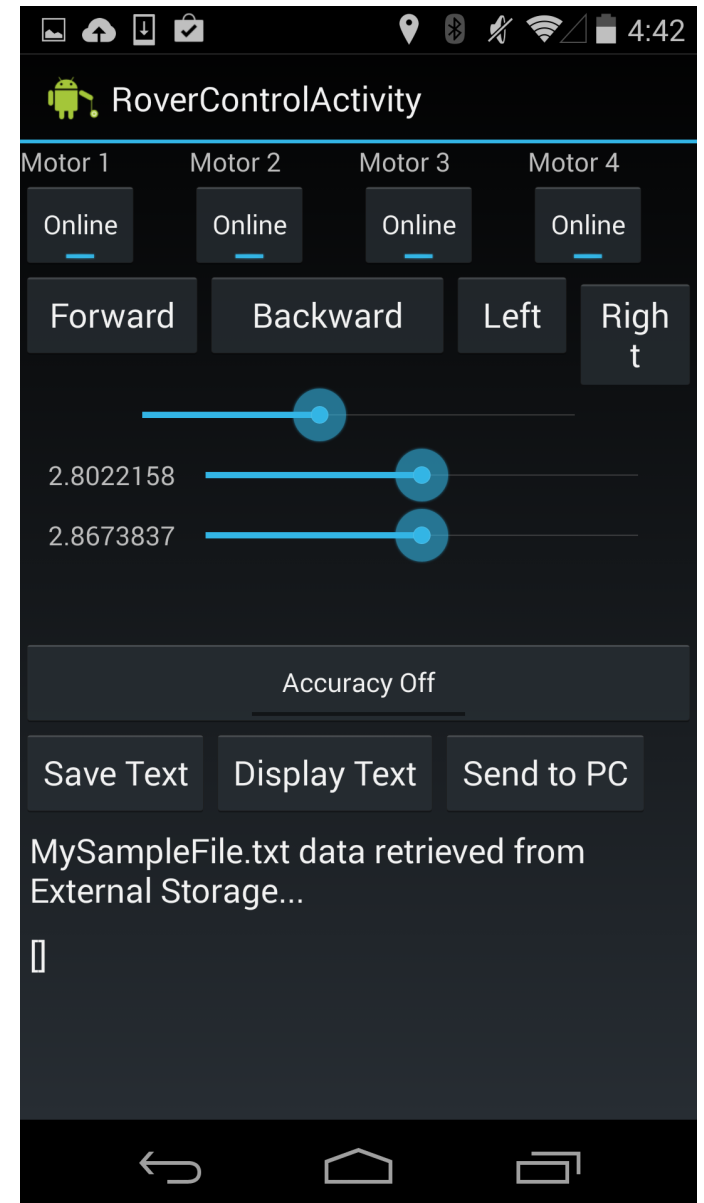
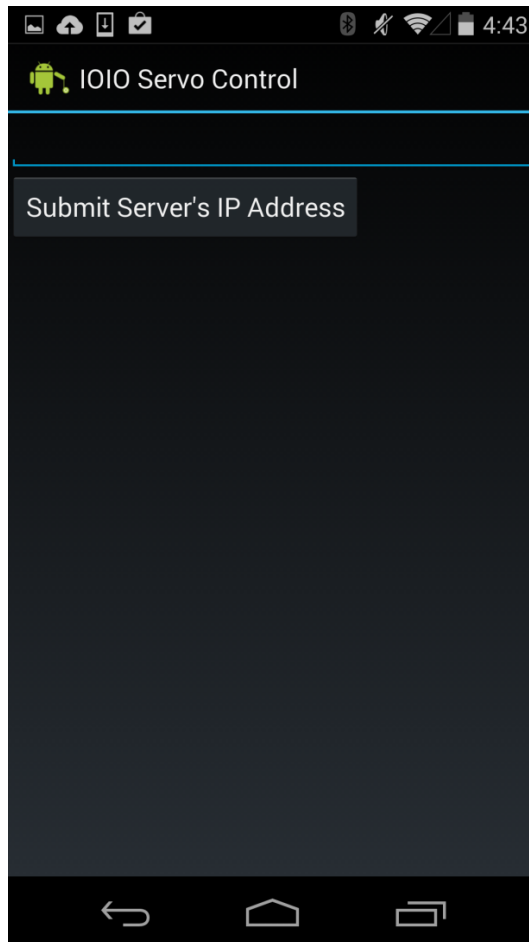
Forward

Left Stop Right

Backward

Close

The App:



Quick Video:

- ▶ Rover moving around 2 obstacles then continuing on its path:
- ▶ [Video 1](#)
- ▶ [Video 2](#)



Future Work:

- ▶ Apply the evolving neural network to the rover.
- ▶ “Train” the rover where the obstacles are.
- ▶ Record the weights of the network to show evolution.

