Rapid Generation of Training Tracking Data for Organic Targets

1984
WAS
~~NOT~~
SUPPOSED
TO BE AN
INSTRUCTION
MANUAL

The Problem - short and long-term

- Predicting location of an animal in video feed
  - Discrimination between similar looking animals

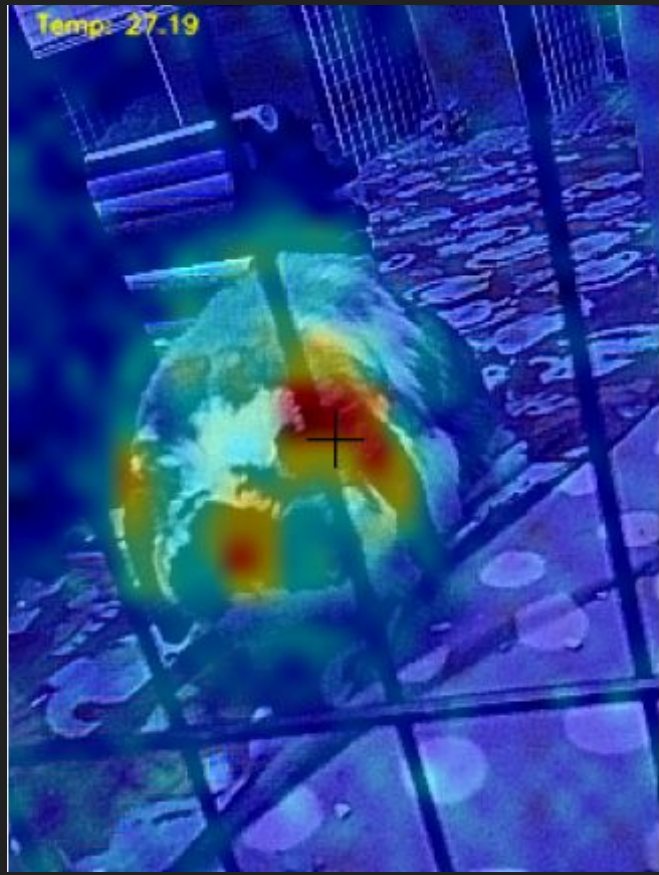
The Hopeful Solution

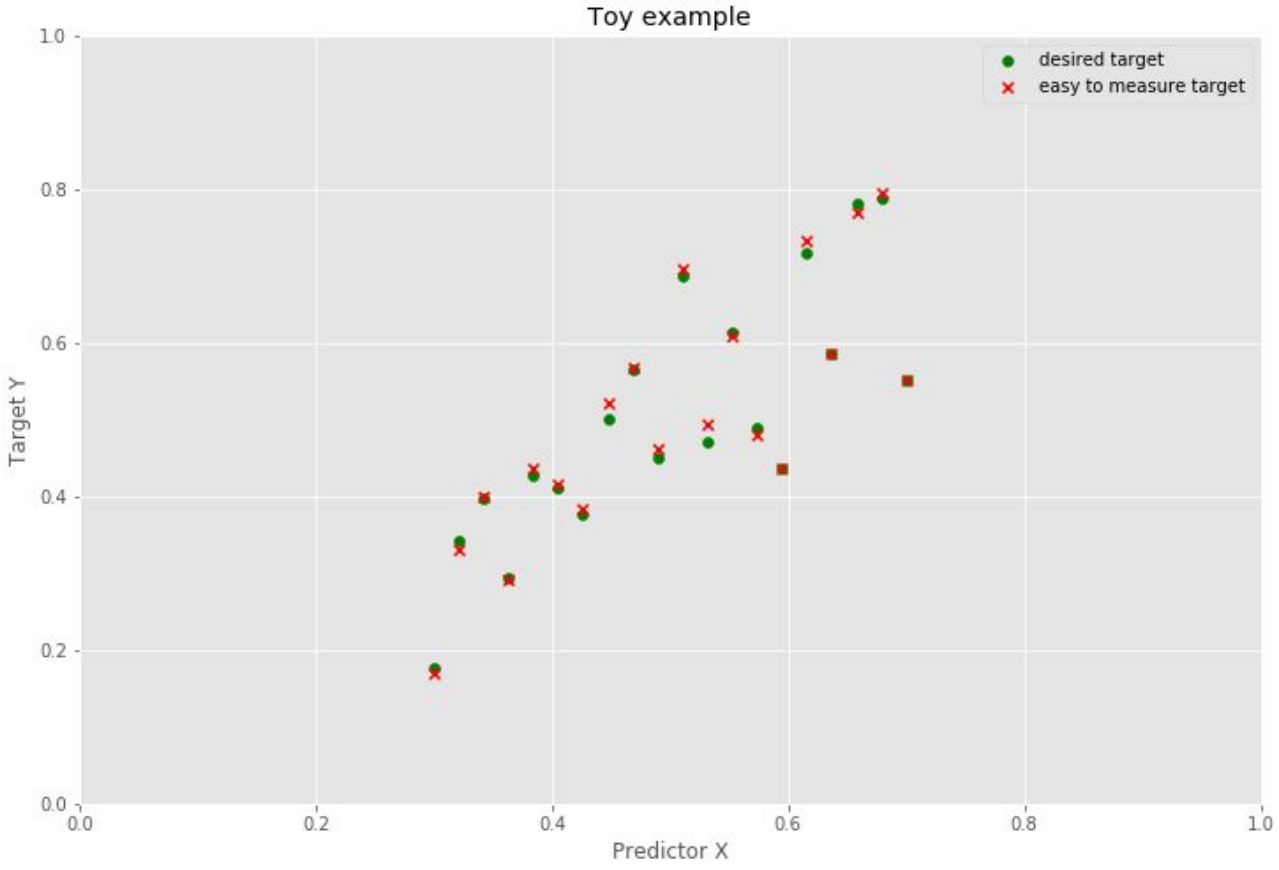
- Training CNN with each individual target for both tracking and discrimination

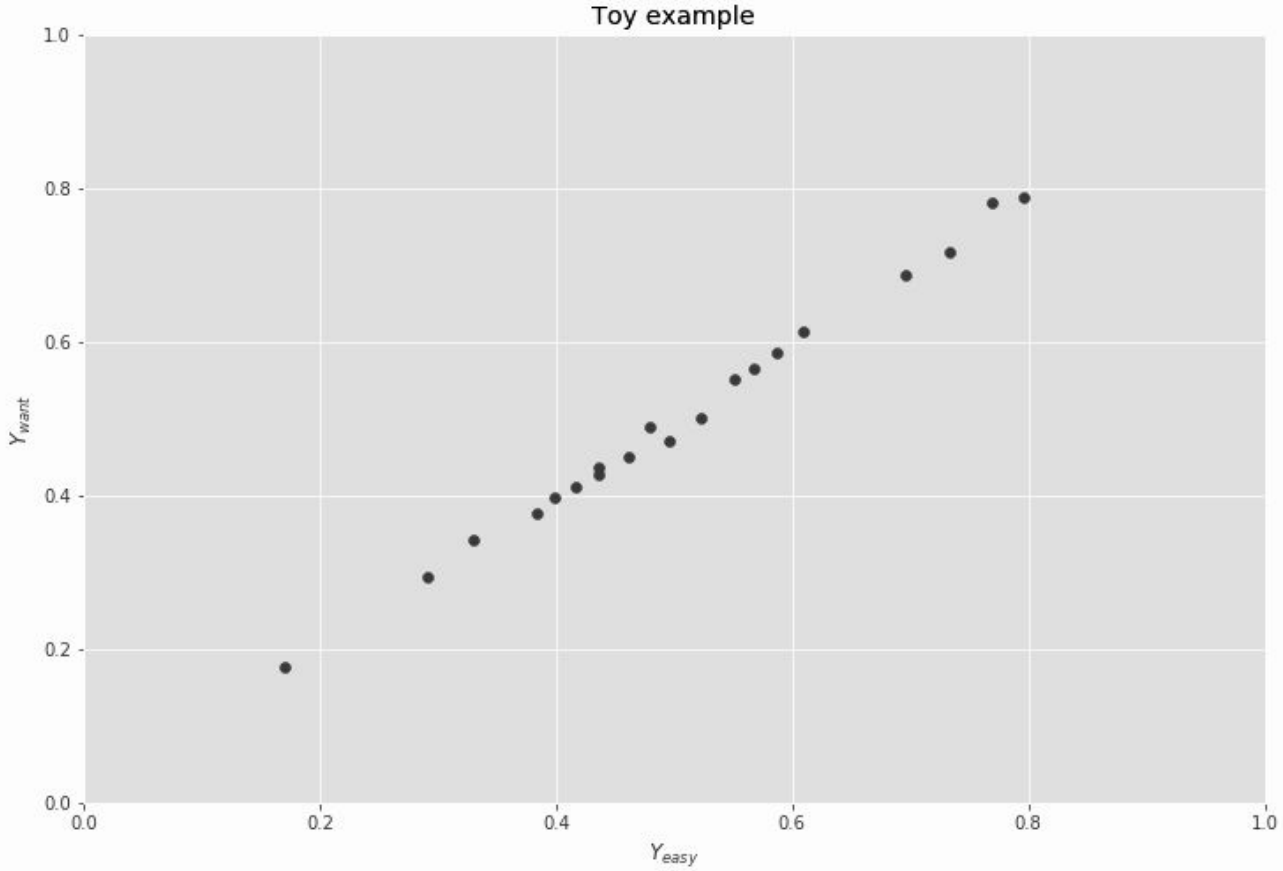
- Connect location predictions to specific target data
  - Insight into specific routines
  - Health warnings

The Approach

- Isolate subject
- Scan with video and thermal imaging
  - Thermal camera is generating our target for training
    - This isn’t actually what we’re trying to predict
  - Video as predictor

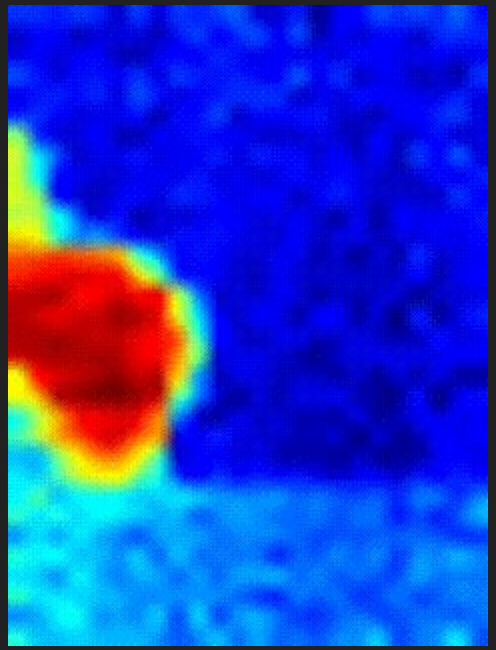



Toy example
desired target
easy to measure target
Target Y
Predictor X
0.0
0.2
0.4
0.6
0.8
1.0

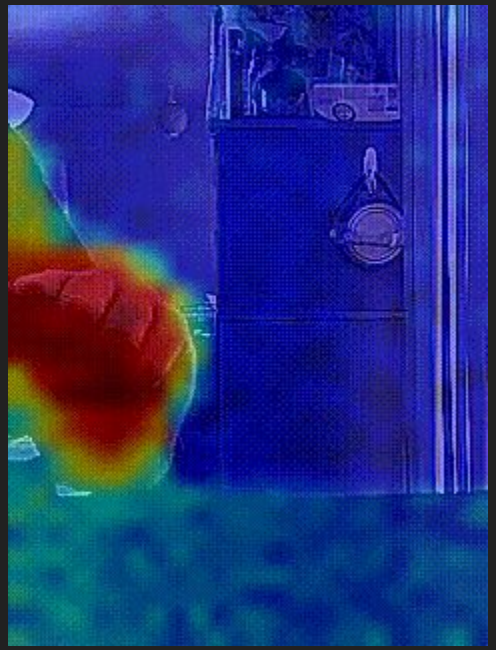

Toy example
1.0
0.8
0.6
0.4
0.2
0.0
Y_{want}
0.0
0.2
0.4
0.6
0.8
1.0
Y_{easy}

Predictor

Target

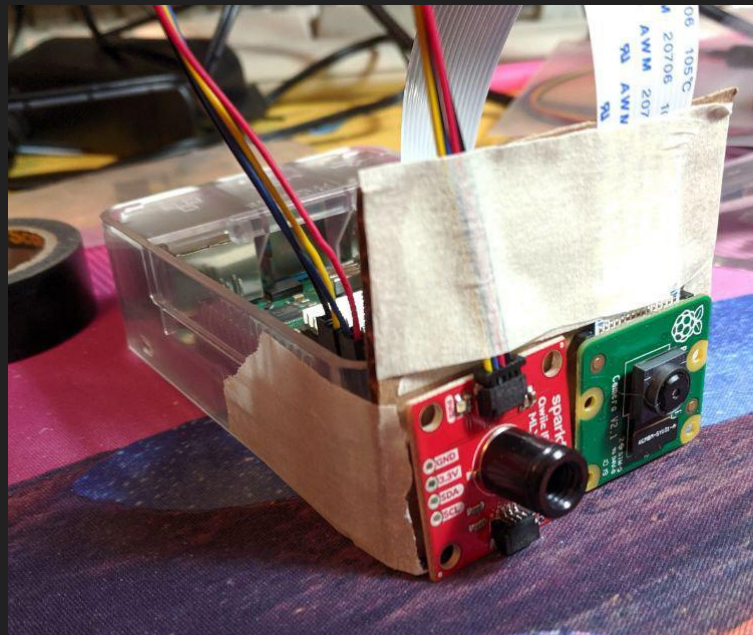


Combination



Next Capstone Week Goals

- Get the CNN running and trained
  - Currently have it vaguely broken, but I have data now properly formatted!
- Predict/track location of some heat emitting target
  - Maybe rabbit/guinea pig
  - Maybe tracking hand in frame?
- Stretch goal:
  - Clustering analysis of location data
  - Improve raspberry-pi to be in 3d printed case



Lessons:

- Keep friends close, enemies closer, data on hand.
- Bunnies/guinea pigs are unpredictable test subjects
    - Toy data/easy to generate data first!