Software Capstone design

Application Research
by using Embedding board(Jetson xavior)

Team Coincidence
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1. Background

Attached Sensors

Excavator in construction sites

Safety Issue

Pose Estimation

Attached sensor

Expensive, Difficult, Time-consuming

2. Subject

Computer Vision

Detect object and Recognize object's action

Problem: to find clear characteristics depending on different angles

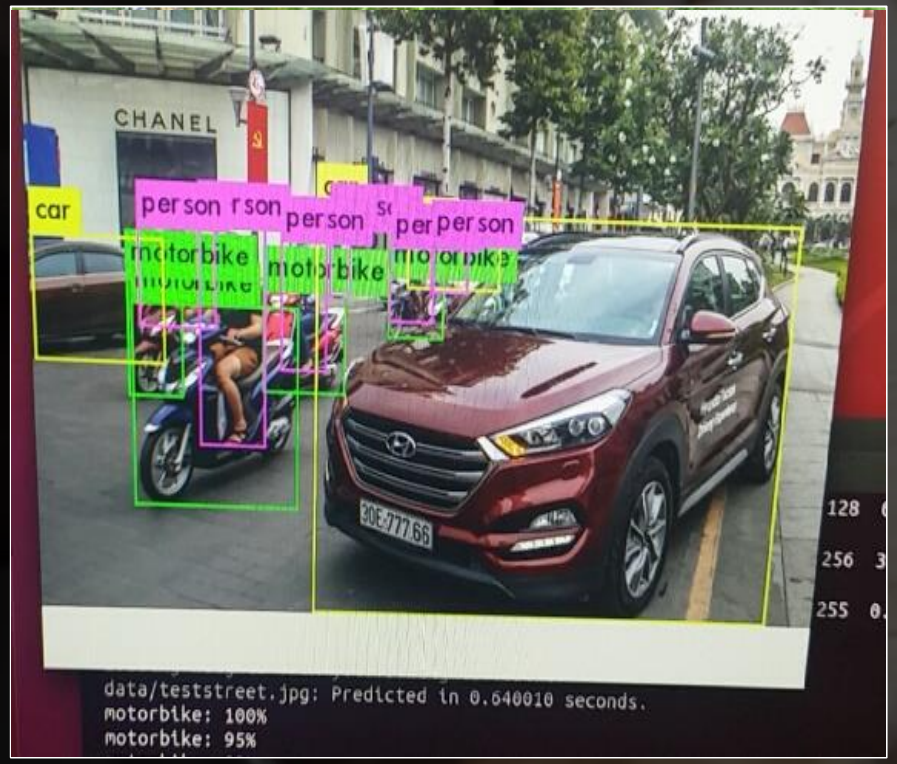
1. Dumping
2. Digging
3. Moving forward
4. Moving backward
5. Turning around
6. Moving side

...

3. Method

(a) Object Detection

YOLO algorithm(You Only Look Once)



Object is detected for a second

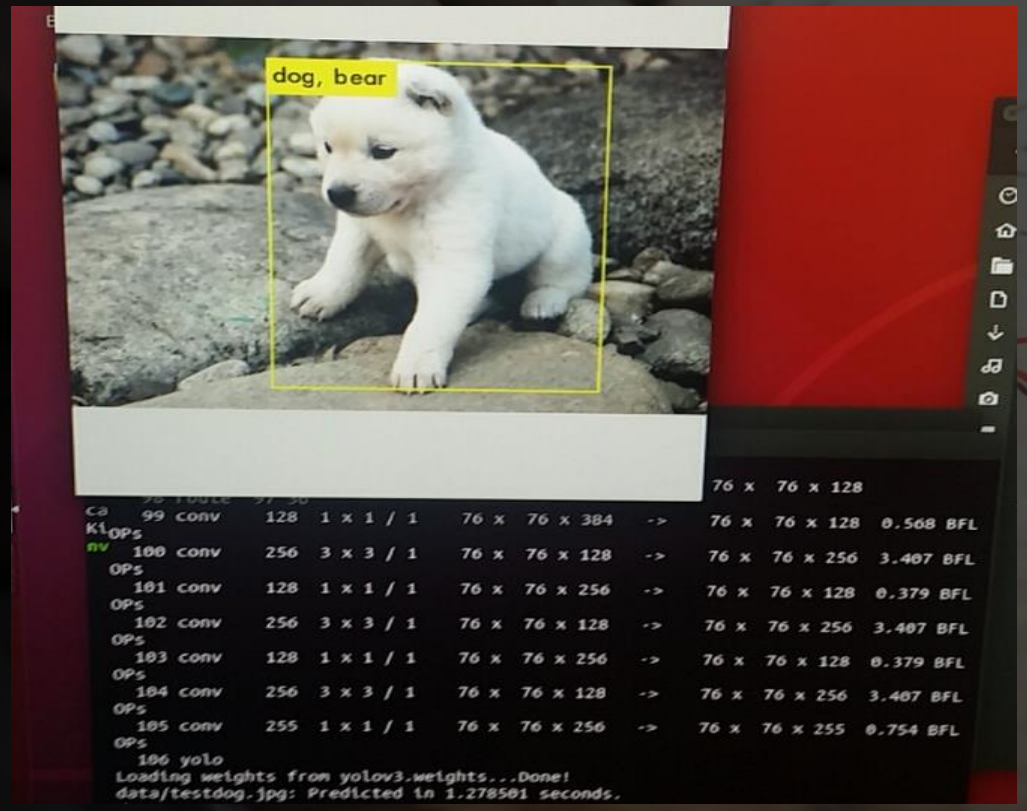
Training through

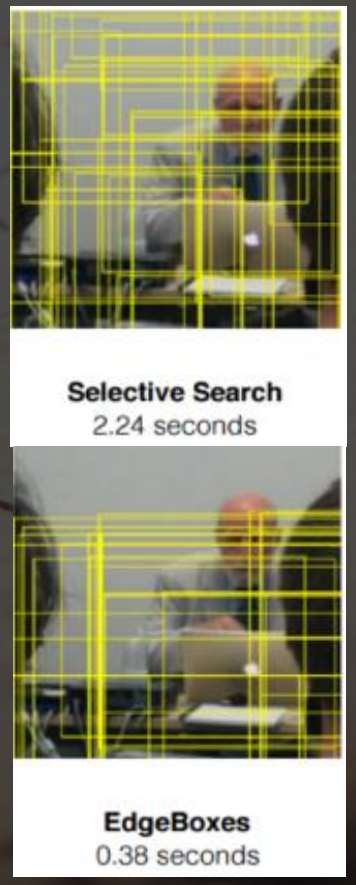
photos which have clear differences

3. Method

(a) Object Detection

YOLO algorithm(You Only Look Once)

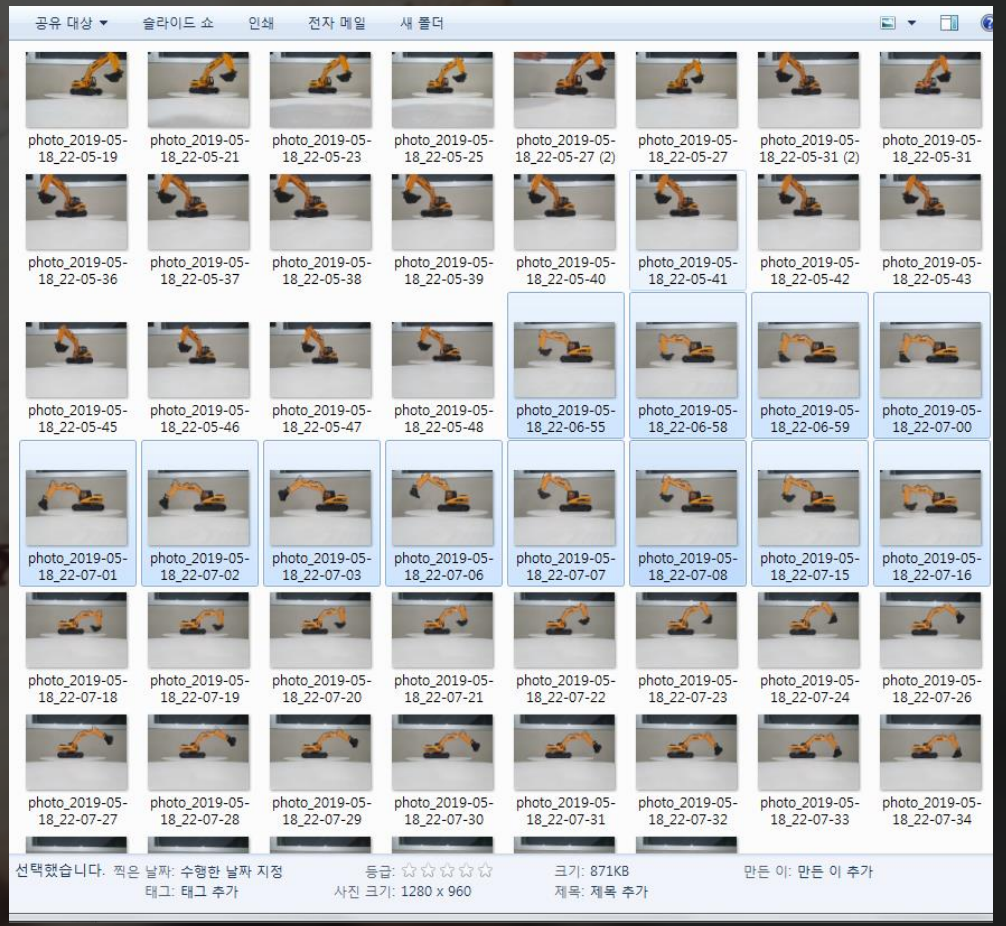




3. Method

(a) Object Detection

YOLO algorithm(You Only Look Once)



3. Method

(b) Action Recognition

Action can be recognized in time-series

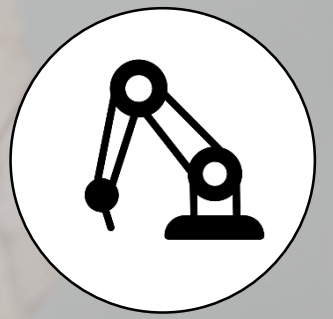
RNN-LSTM

Digging

4. Validation

Problems to fix
a. fixed camera angle
b. Accuracy in redundant actions(Digging, Dumping)
c. Rotating

How to solve?
a. Data with numerous angles
b. Improve pose-estimation model



4. Validation

a. Digging

b. Dumping

c. Moving

d. Rotating

5. VideoClip