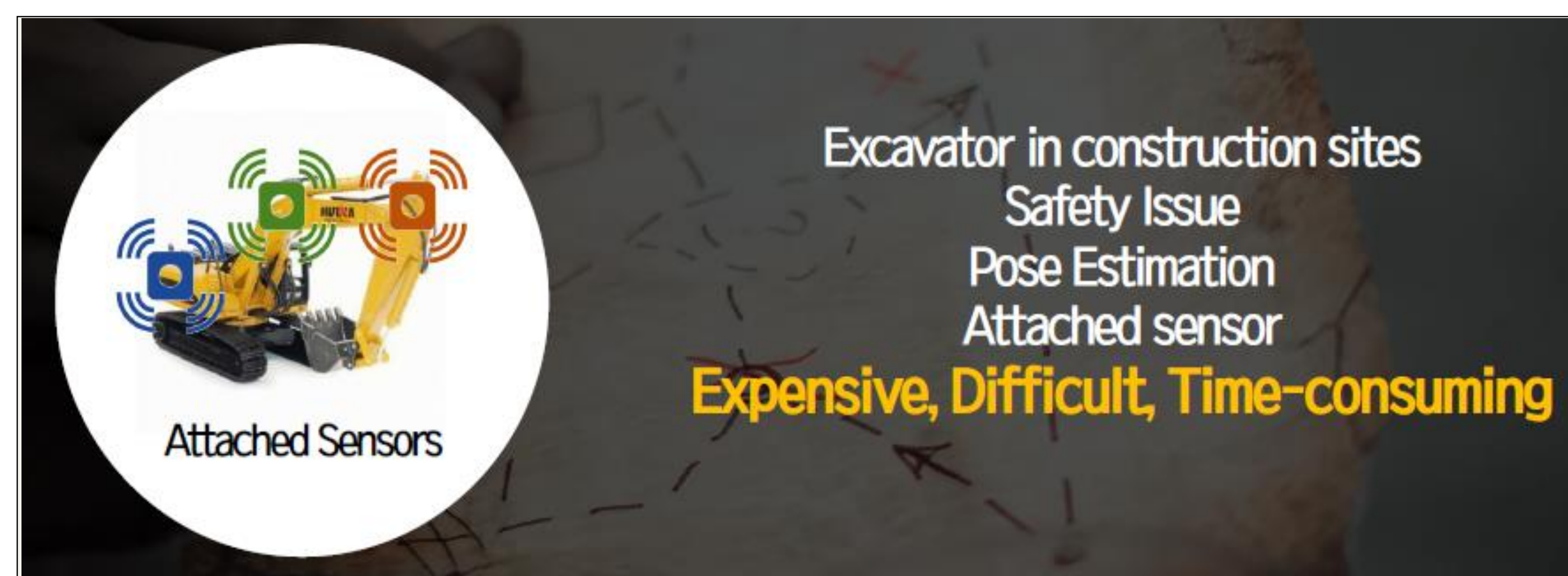# Application Research
By using Embedding board(Jetson Xavior)

Team: Coincidence
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Background

Excavator in construction sites
Safety Issue
Pose Estimation
Attached sensor
Expensive, Difficult, Time-consuming
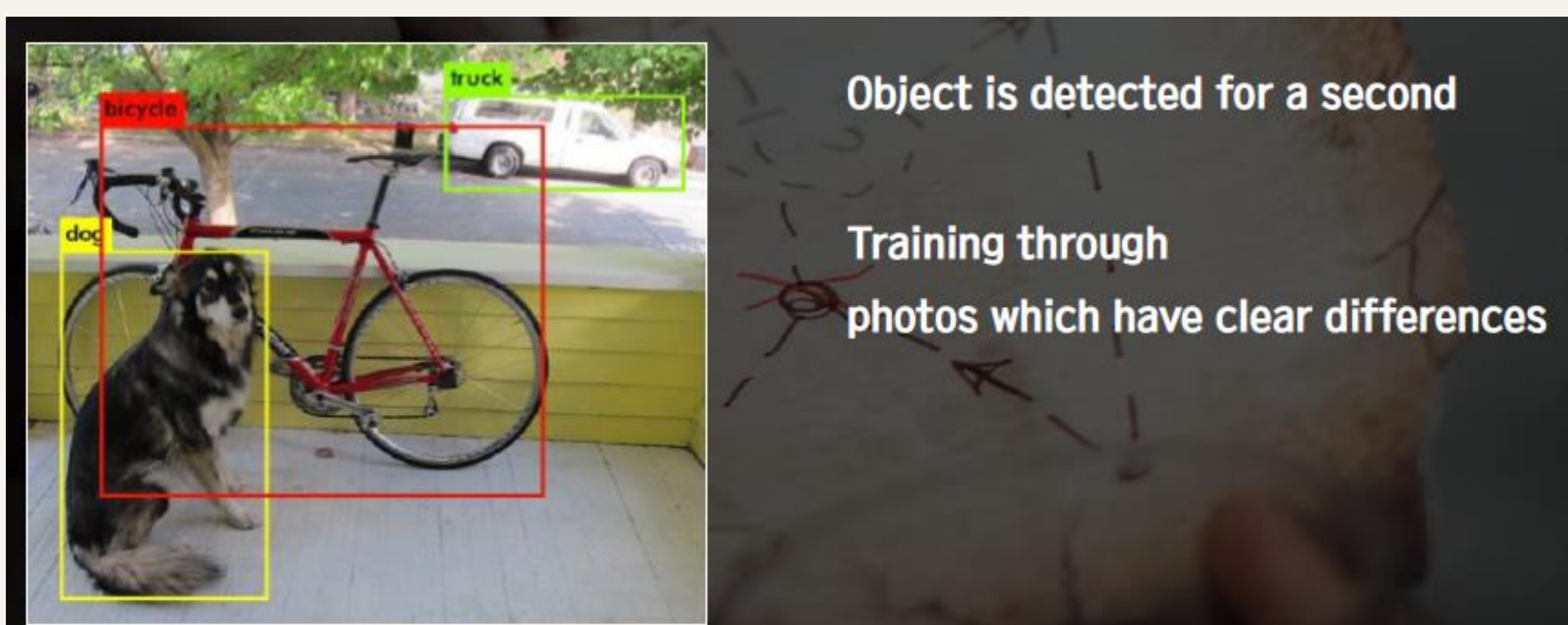
Attached Sensors

Subject

Detect object and **Recognize** object's action
By using computer vision algorithm

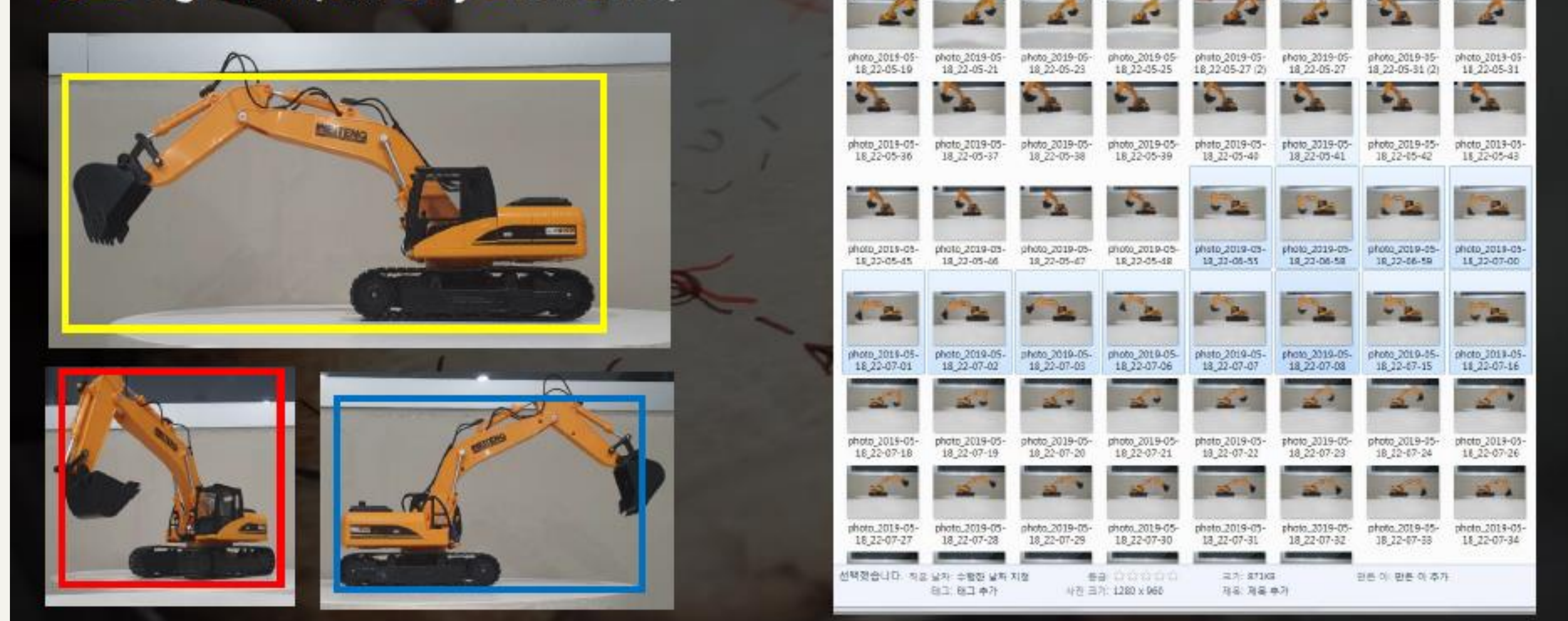problem: to find clear characteristics depending
on different angles

Method

STEP1 Object Detection
YOLO Algorithm(You Only Look Once)

Object is detected for a second

Training through
photos which have clear differences

TRAINING MODEL

YOLO algorithm(You Only Look Once)

STEP2 Action Recognition

RNN-LSTM

OpenPose — 'h' for help

Frame: 108

RNN-LSTM(Pose-Estimation)

example) Human-Body Estimation

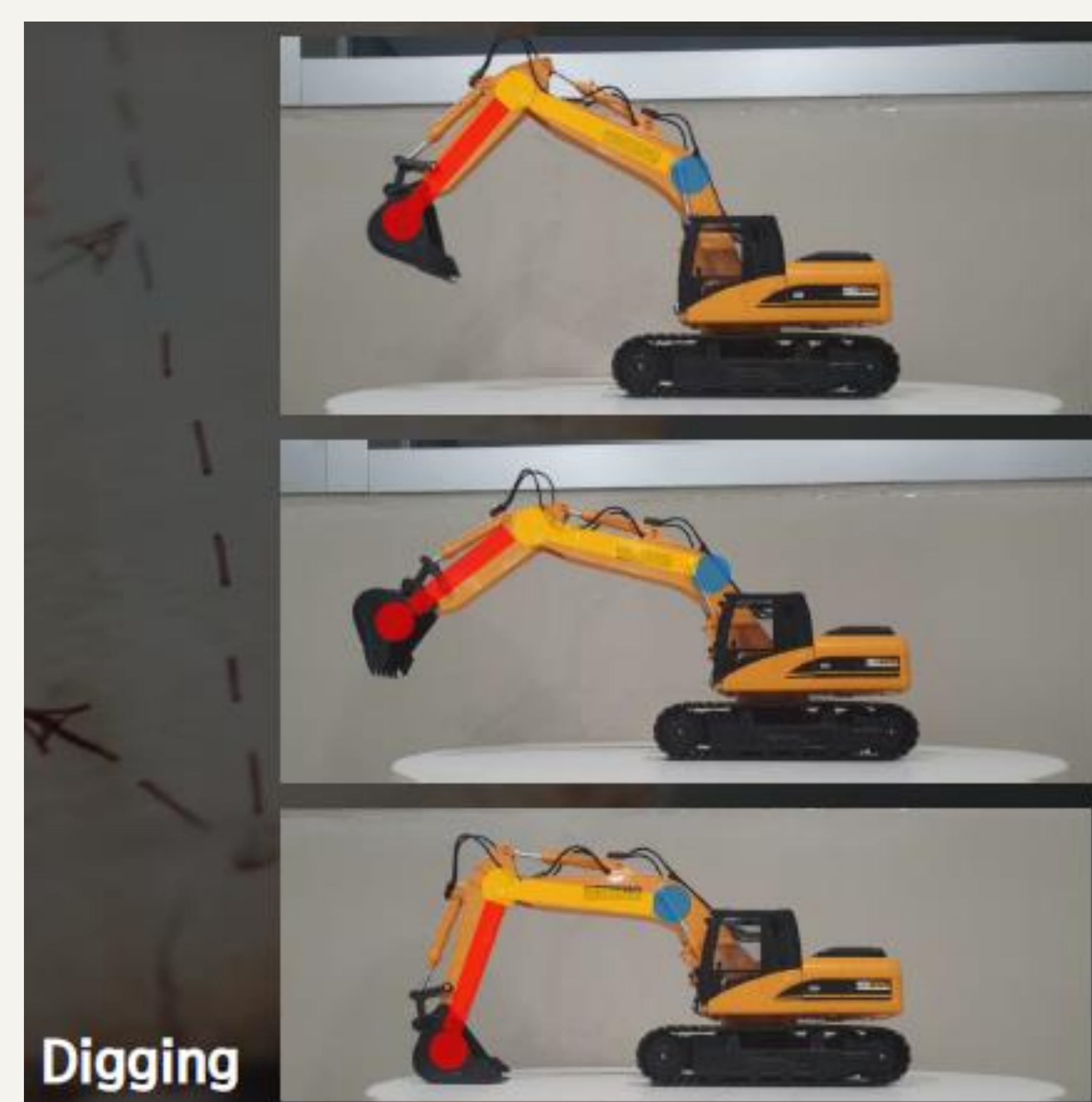Actions can be recognized

in time-series data

Insights

To apply pose-estimation
to Excavator

STEP2 Action Recognition

We recognize excavator's actions in time-series data by using pose-estimation

*picture below is digging example

Digging

Results

We validated our model with different dataset whose angle is 10 degrees higher than training dataset to avoid overfitting problem

10 UP

And performance was more or less same as training one. To Improve performance, Data with numerous angles are needed