

Report COL788

Github Project link-<https://github.com/imgk120601/COL788>

Contributors-

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PART2 embedded

Reproduced Yoga pose estimation with Sensortilebox, STBLE app and Unico, as Unico works on Linux laptops

STEPS to open the project-

open github

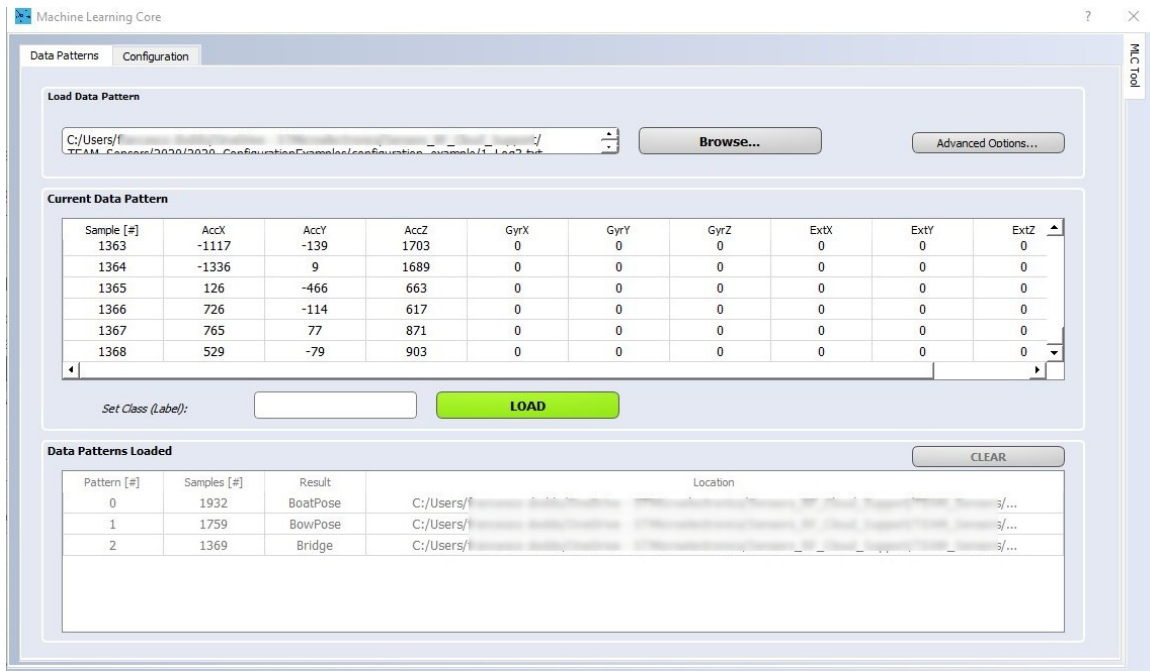
download 1_datalogs

install unico_gui

Load and Label Data Logs

1. The SensorTile.box board doesn't need to be plugged into the PC. Unico GUI can work in standalone in "offline" mode: run the Unico GUI, and uncheck "Communication with the motherboard".
2. **Type "OX" in the search field, select LSM6DSOX** and confirm by pressing the corresponding button.
3. Click on the **MLC button** in the side bar. Select the **Data Patterns tab** (it should already be selected).

4. For each class, click on **Browse** to select the corresponding data log files (multiple files can be selected simultaneously in the dialog), type the label for the class, and click **Load**. Repeat for each class.
5. 1. When all data logs are loaded, select the **Configuration tab**. For each step, select the desired configuration, then click **Next**.



Press the button "GENERATE" to generate a new decision tree. The decision tree will be automatically saved (same folder as the arff file).

Settings selected in the Configuration tab:

1. LSM6DSOX sensor
2. MLC running at 104Hz
3. Accelerometer only
4. Accelerometer configured for 2g full scale and 104Hz data rate
5. One decision tree only
6. Window length of 52 samples
7. No filter (select "End filters configuration")

8. Select the following features and click Next when done:

- Mean on accelerometer X-axis: F1_MEAN_on_ACC_X
- Mean on accelerometer Y-axis: F2_MEAN_on_ACC_Y
- Mean on accelerometer Z-axis: F3_MEAN_on_ACC_Z

we have to add 14(0-13) classes

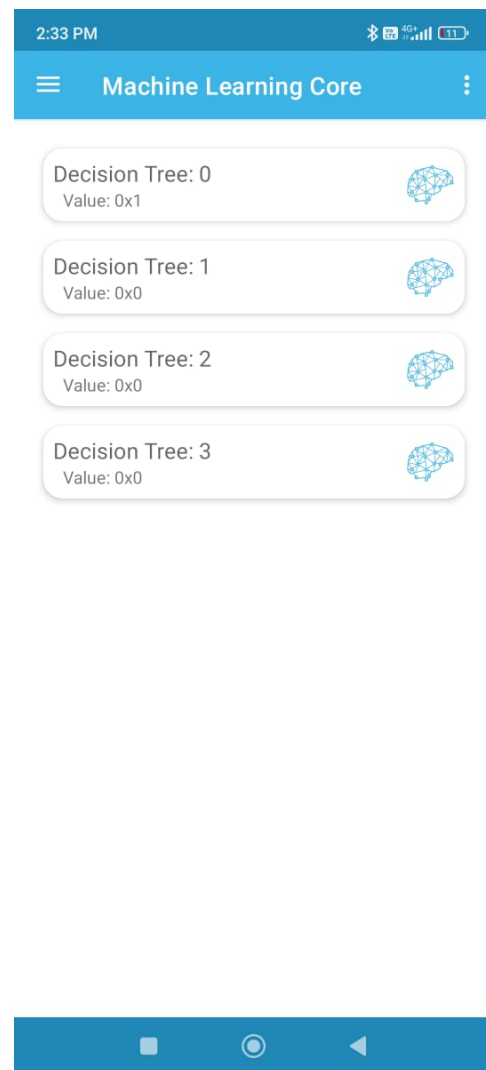
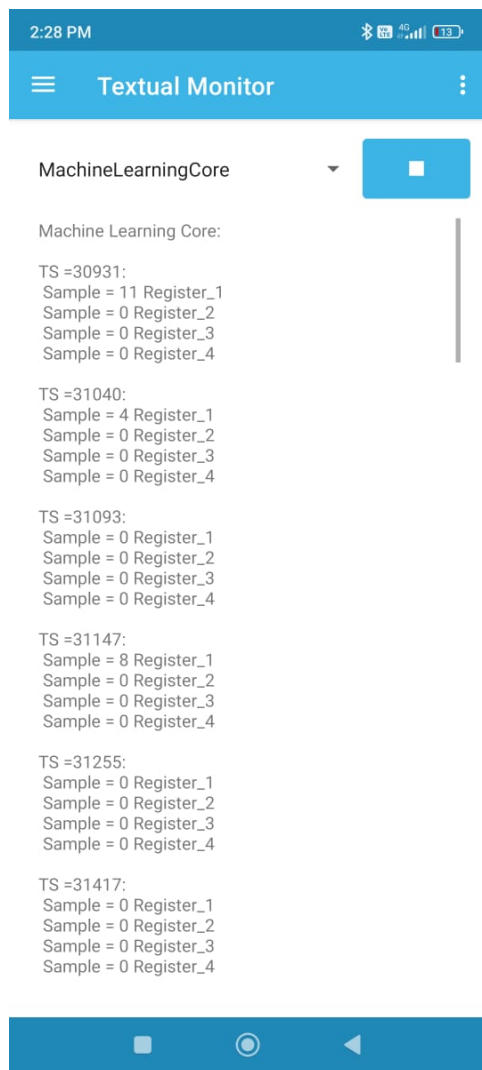
- 0 = Boat Pose
- 1 = Bow Pose
- 2 = Bridge
- 3 = Child's Pose
- 4 = Cobra's Pose
- 5 = Downward-Facing Dog
- 6 = Meditation Pose
- 7 = Plank
- 8 = Seated Forward Bend
- 9 = Standing in Motion
- 10 = Standing Still
- 11 = The Extended Side Angle
- 12 = The Tree
- 13 = Upward Plank

LOAD THE.arff file to phone download the sensortile classic app.

Connect and record the result.

Features: Mean	Input: ACC_X	<input checked="" type="checkbox"/> Enabled	<input checked="" type="checkbox"/> Signed
Features: Mean	Input: ACC_Y	<input checked="" type="checkbox"/> Enabled	<input checked="" type="checkbox"/> Signed
Features: Mean	Input: ACC_Z	<input checked="" type="checkbox"/> Enabled	<input checked="" type="checkbox"/> Signed
Features: Mean	Input: ACC_V	<input type="checkbox"/> Enabled	

Testing:



Result:

Input pos	Predicted pos
0	4
1	1
2	4
3	3
4	3
5	4
6	9
7	13
8	8
9	8
10	8
11	12
12	13
13	13

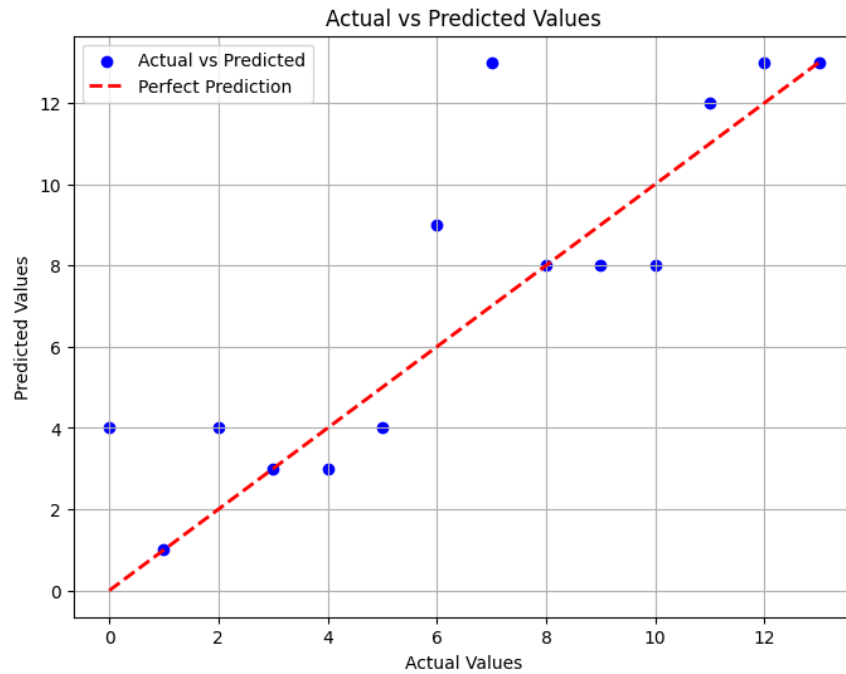
TOTAL CORRECT PREDICTION: 4 OUT OF 14

ACCURACY: 28.57 A%

Mean Absolute Error (MAE): 1.57

Mean Squared Error (MSE): 5.29

R-squared (R2): 0.67



True Label \ Predicted Label	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
3	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	1	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	1	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8	0	0	0	0	0	0	0	0	1	0	0	0	0	0
9	0	0	0	0	0	0	0	0	1	0	0	0	0	0
10	0	0	0	0	0	0	0	0	1	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	1	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	1	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	1

COL788 project part-1