

CPE477/ECG677 – Embedded Security & Machine Learning

Design Assignment 1

DO NOT REMOVE THIS PAGE DURING SUBMISSION:

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Github Repository link (root): <https://github.com/NicolasE04/yeahsure.git>

YouTube Playlist link (root): [cpe_477](#)

Follow the submission guideline to be awarded points for this Assignment.

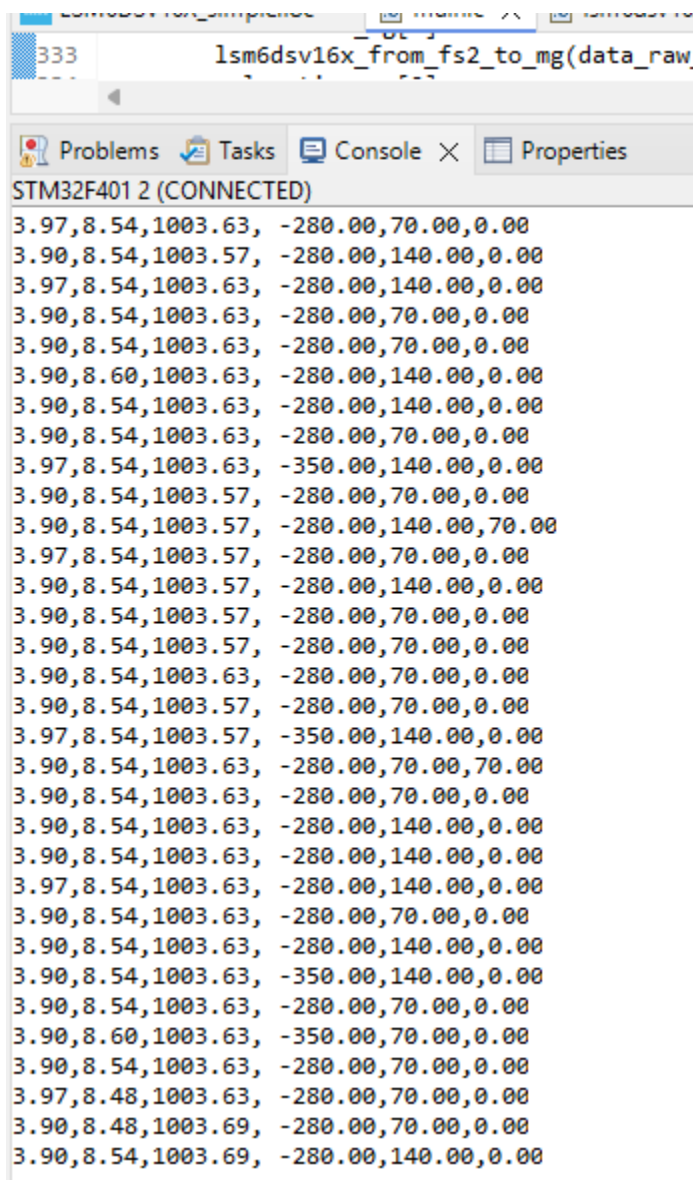
Submit the following for all Assignments:

1. In the document, for each task submit the modified or included code (from the base code) with highlights and justifications of the modifications. Also include the comments. If no base code is provided, submit the base code for the first task only.
2. Create a private Github repository with a random name (no CPE477/677, Lastname, Firstname). Place all assignments under the root folder, sub-folder named Assignmentn, with one document and one video link file for each lab, place modified c files named as main.c.
3. If multiple 'c' or 'h' files or other libraries are used, place these files inside the folder.
4. The folder should have a) Word document (see template), b) source code file(s) with other 'c' and 'h' include files, c) text file with YouTube video links (see template).
5. Submit the PDF file in Canvas before the due date. The root folder of the github assignment directory should have the documentation and the text file with youtube video links.
6. Organize your youtube videos as playlist under the name "EMBSEC&ML". The playlist should have the video sequence arranged as submission or due dates.
7. Only submit pdf documents. Do not forget to upload this document in the github repository and in the canvas submission portal.

1. Goal: Explain what is explored in this assignment and what was accomplished.

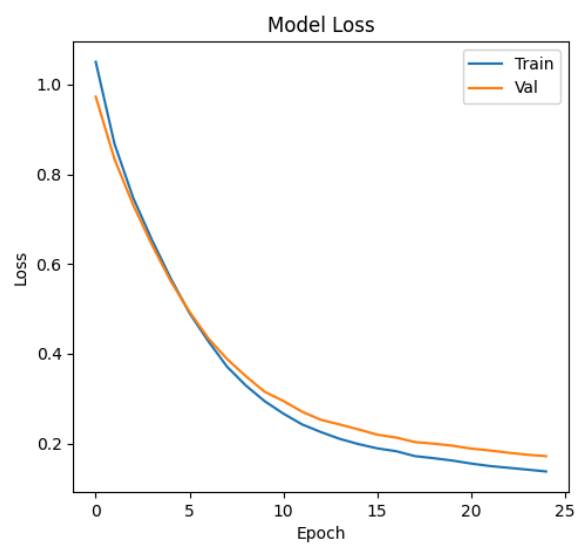
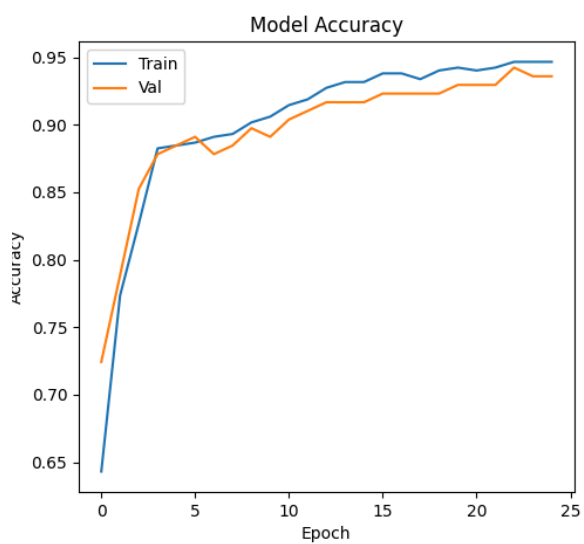
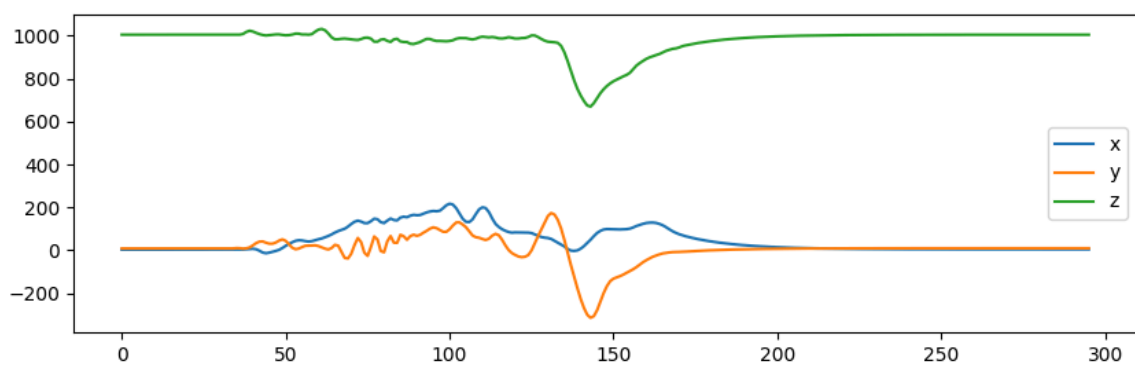
The goal was to build a complete edge AI system from sensing motion, to training a machine-learning model, to running that model directly on the microcontroller. This showed how machine learning can be used in small, low-power devices for real-time motion recognition.

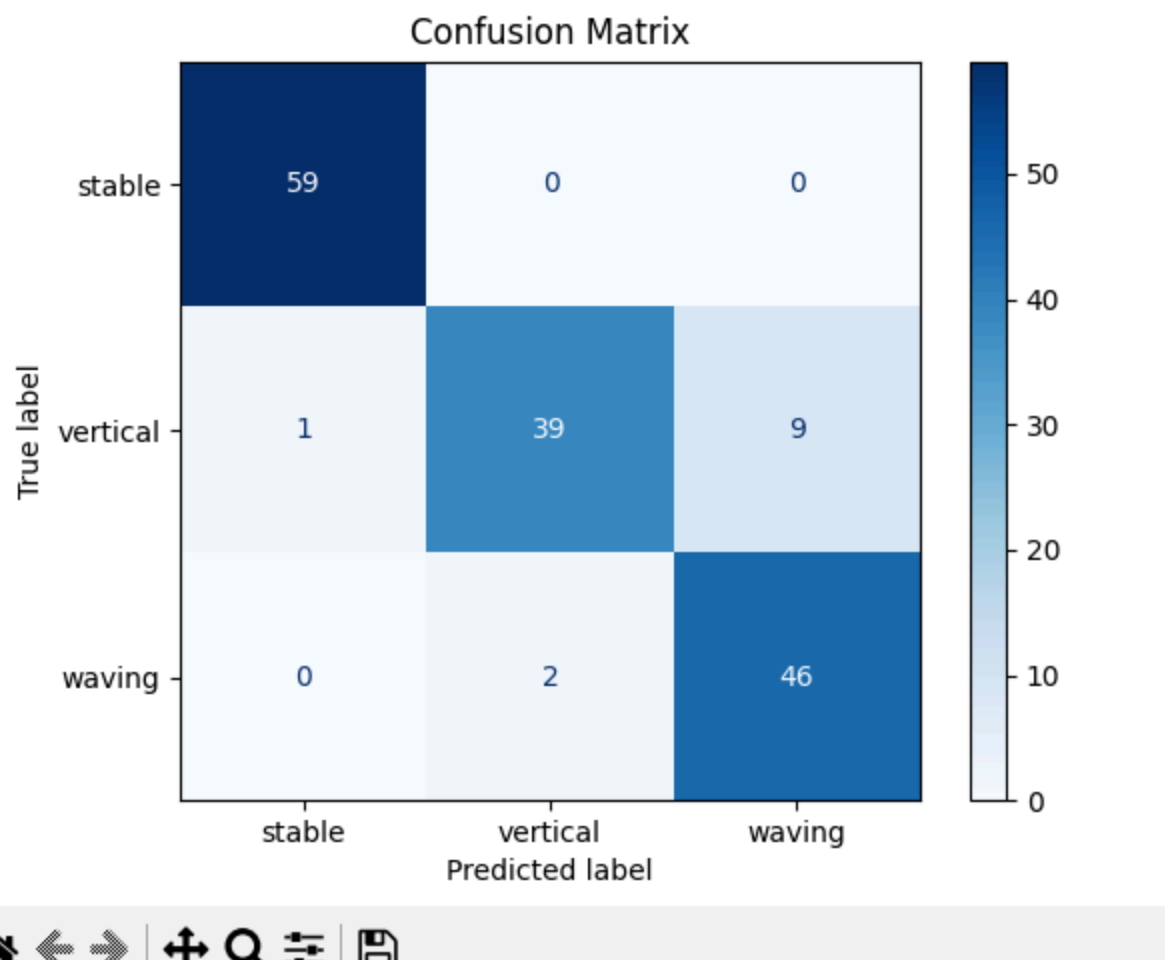
2. Screenshots of the IDE, physical setup, and debugging process – Provide screenshots of successful compilation, screenshots of graphs, etc.

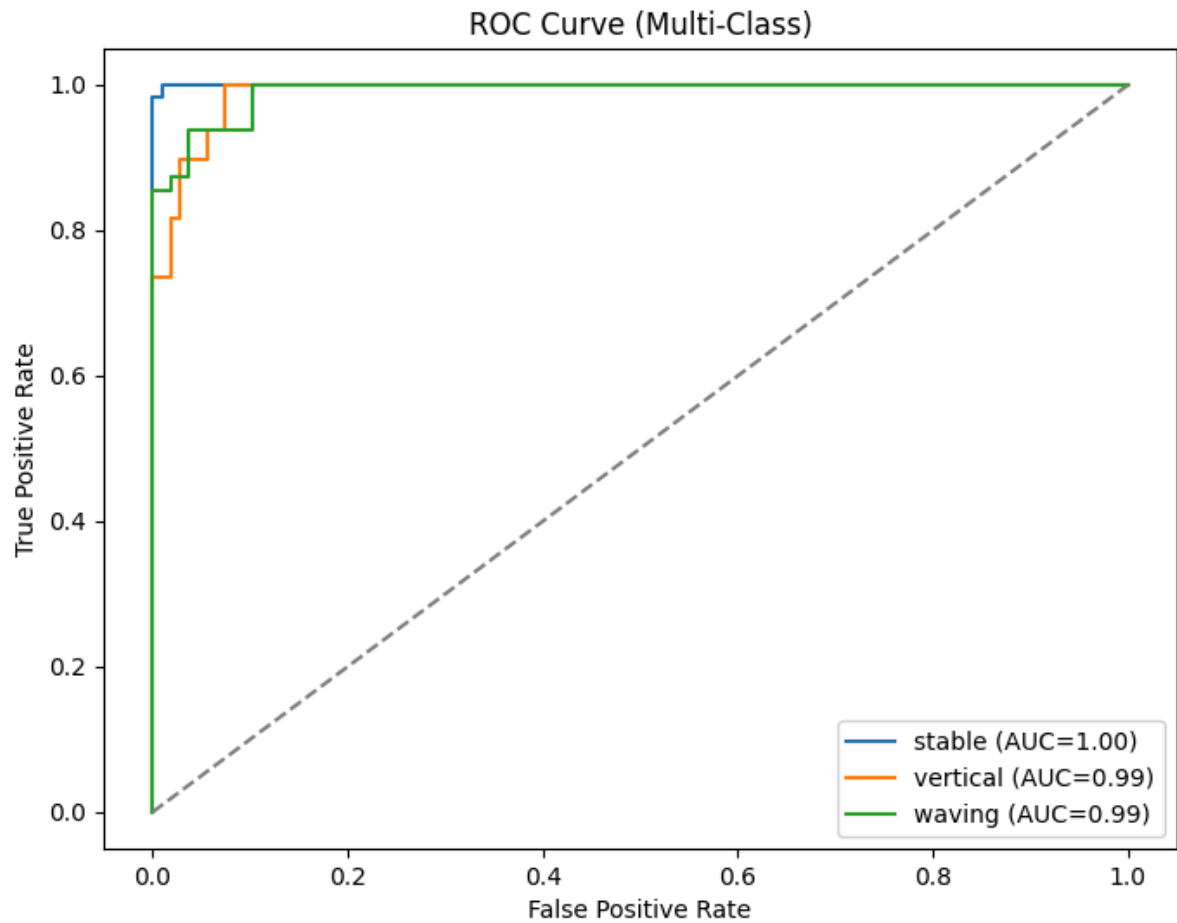


The screenshot shows an IDE window with a tab labeled 'lsm6dsv16x_from_fs2_to_mg(data_raw_'. Below the code editor, there is a 'Console' tab selected, displaying a list of sensor data points. The data is organized into columns, likely representing time, acceleration, and gyroscope readings. The text 'STM32F4012 (CONNECTED)' is visible at the top of the console output.

```
STM32F4012 (CONNECTED)
3.97,8.54,1003.63, -280.00,70.00,0.00
3.90,8.54,1003.57, -280.00,140.00,0.00
3.97,8.54,1003.63, -280.00,140.00,0.00
3.90,8.54,1003.63, -280.00,70.00,0.00
3.90,8.54,1003.63, -280.00,70.00,0.00
3.90,8.60,1003.63, -280.00,140.00,0.00
3.90,8.54,1003.63, -280.00,140.00,0.00
3.90,8.54,1003.63, -280.00,70.00,0.00
3.97,8.54,1003.63, -350.00,140.00,0.00
3.90,8.54,1003.57, -280.00,70.00,0.00
3.90,8.54,1003.57, -280.00,140.00,70.00
3.97,8.54,1003.57, -280.00,70.00,0.00
3.90,8.54,1003.57, -280.00,140.00,0.00
3.90,8.54,1003.57, -280.00,70.00,0.00
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3.90,8.54,1003.57, -280.00,70.00,0.00
3.97,8.54,1003.57, -350.00,140.00,0.00
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3.90,8.54,1003.63, -280.00,70.00,0.00
3.97,8.48,1003.63, -280.00,70.00,0.00
3.90,8.48,1003.69, -280.00,70.00,0.00
3.90,8.54,1003.69, -280.00,140.00,0.00
```







3. Declaration

I understand the Student Academic Misconduct Policy -
<http://studentconduct.unlv.edu/misconduct/policy.html>

"This assignment submission is my own, original work".
Name of the Student