KeyWord Spotting (KWS) Application: Your First and Last Names

EECE-4710 IoT and Machine Learning

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1. Objective

Develop and train a model to spot two keywords: 'your_first_name' and 'your_last_name'. This is done in Edge Impulse with testing on the Arduino Nano 33 BLE Sense.

2. Assignment

You must redo the entire example showed in class, which focused on spotting the keywords "engineering" and "marquette". You will do it for the case of using your first and last names instead of the "engineering" and "marquette".

First, read **W12_2_Tutorial_KeyWord_Spotting.pdf** for details on how to do things. Also, follow the steps illustrated in the slides (and shown in class too) during work in Edge Impulse.

Before anything, you will have to create your own dataset, which will include 3 folders:
1. your_first_name
2. your_last_name
3. Silence (with some background noise, such as a faucet running)

Each folder should include 50 .wav audio files **1s long recordings at 16KHz**.

Then, you must create an EI project and do all its steps as described in the slides.

Finally download the Arduino library and test your application Arduino Nano 33 BLE Sense – also as described in the slides.

3. Deliverables

You must write (typed) a report and upload it as a PDF file on D2L. The report should be named "**LastName_hw12.pdf**". Also, you should upload to D2L your dataset with audio recording of your names as a .zip file. The report should include the following sections:
1) Title + course info + your name
2) **Summary.** Describe in one paragraph what the objective of the assignment is.
3) **Application Development.** Describe your application. Include at least a clear snapshot of your EI project steps to demonstrate that it was done successfully.
4) **Application Testing.** Test your application on the Arduino board. Include snapshots of the Serial monitor showing detection of your first and last names.

5) **Conclusion.** Present your conclusions and describe what issues you encountered and how you solved them.
6) **References.** Include all references that you used, as a numbered list. Cite them in the report itself; do not just list them here.

You should also upload on D2L all your Arduino library you downloaded from EI. Include the source code files and the report file into a .zip named "**LastName_hw12.zip**" and upload it on D2L.