Gun Classification Using Audio

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Goal

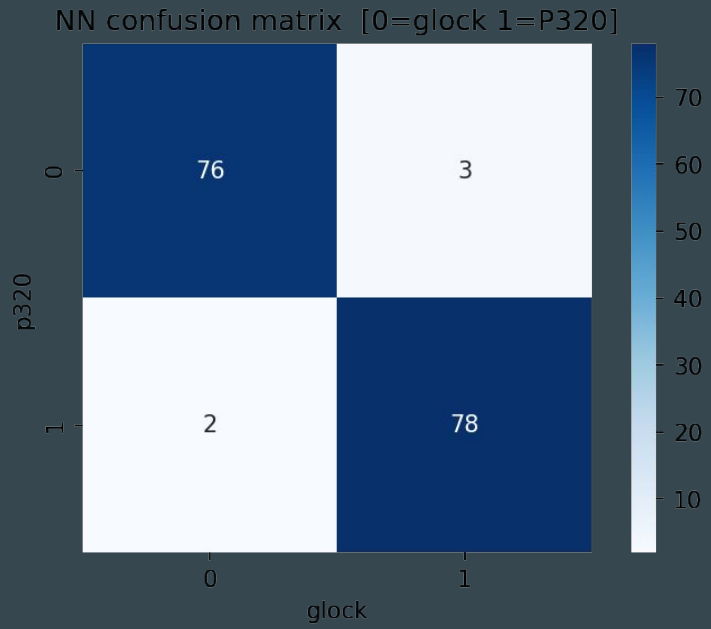
- Classify common firearms using audio clips
- Be able to analyse and identify weapons in real time.
- Ideally be able to build an app that can be passed audio either by link or listening to output device.

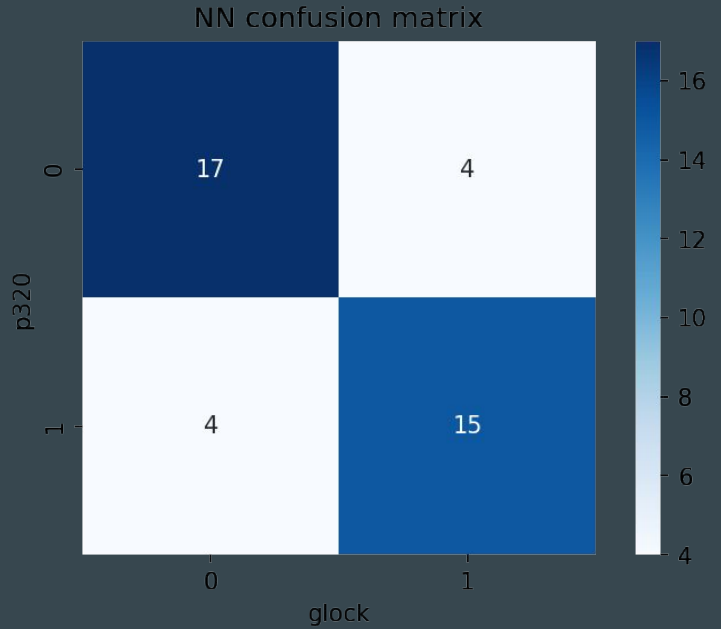
Data Set

- 199 audio samples taken from youtube and labeled.
- Currently only using the two most common handguns in the US
    - Glock 19
    - Sig Sauer P 320
- Each clip is normalized and converted to a 128 x 1464 mel spectrogram to be passed to a CNN.

Progress

Current model seems to be over fit to sample data.





Progress

I have spent a bit of time working on details of live classification with good progress. I have created a cell that takes in speaker sound in 1 second intervals and attempts to classify them into glock or P320. I need to expand on this to cover generic down time.

Next Steps

-Augment data with gaussian noise.

-Add preprocessing step to cut generic noise to try and move model away from learning blank sound as specific firearms.

- Try to add pretrained PCAA model to model.

- Simple model baseline to check performance.

- Go through steps to reduce overfitting.

-Expand window of classification time.