Identification Technology using Eye Blinking signal

Check & Go
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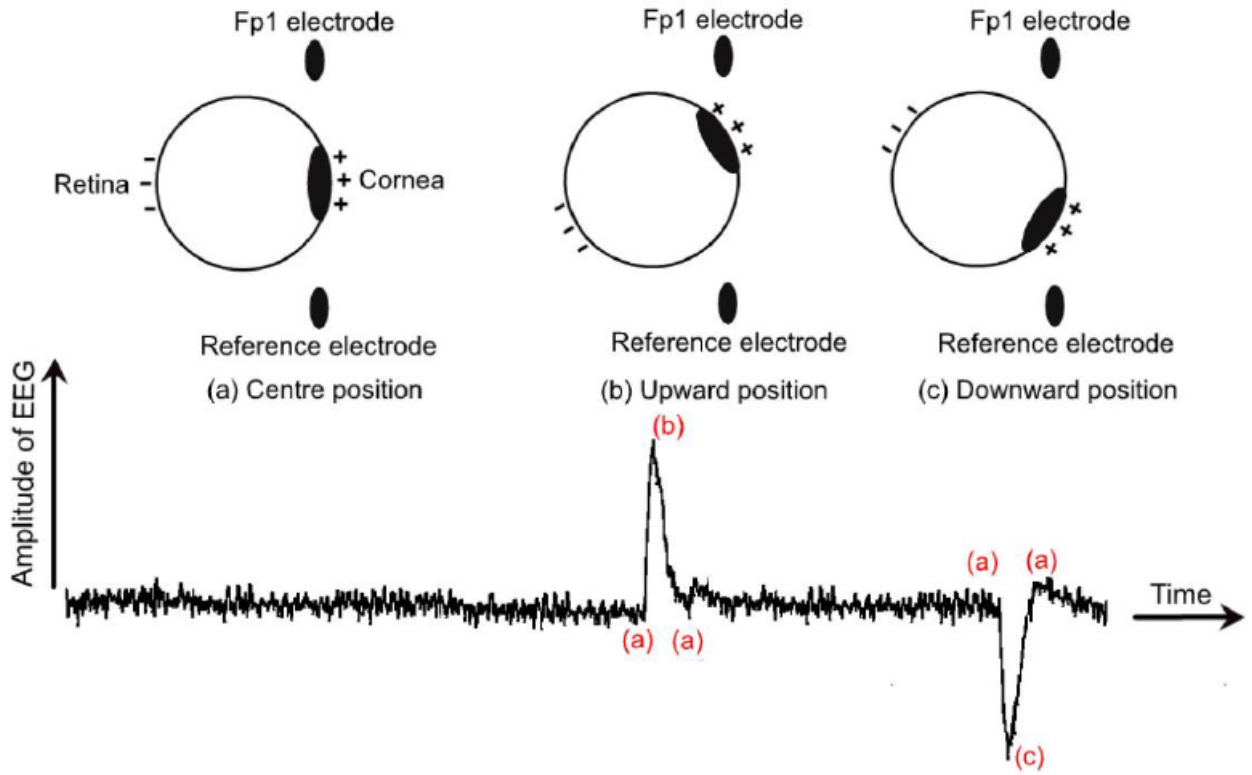
- How to identify
- Application to Motorcycle

- Conclusion

Eye Blinking Signal

- Cornea : positive pole
- Retina : negative pole

- Two electrodes
  - Ear-clip : reference and ground
  - Forehead : EEG sensor arm

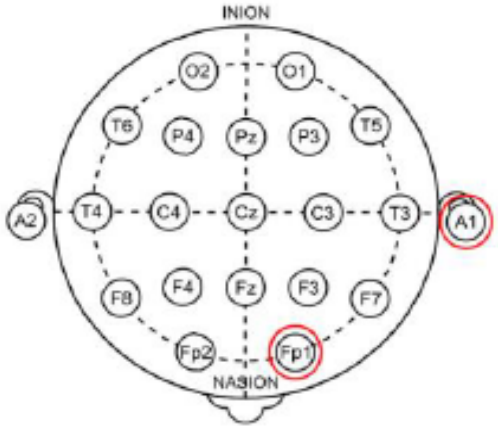


Reference - Abo-Zahhad, M., Sabah M. Ahmed, and Sherif N. Abbas. "A New EEG Acquisition Protocol for Biometric Identification Using Eye Blinking Signals," (2015).

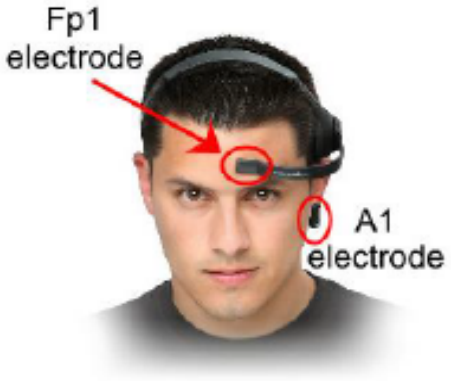
How to identify? (Data acquisition and processing)

- Take EEG signals from Neurosky Mindwave mobile

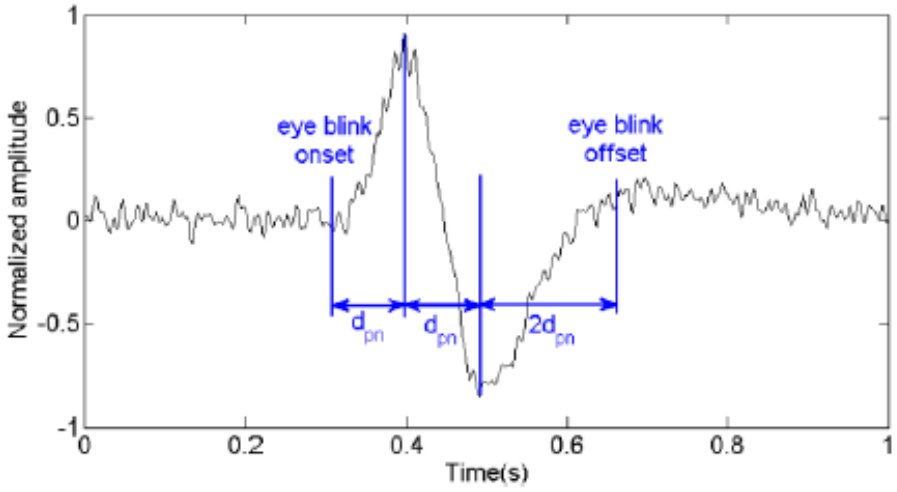
- Pre-processing the data (Normalization , Peak finding)



(a)



(b)



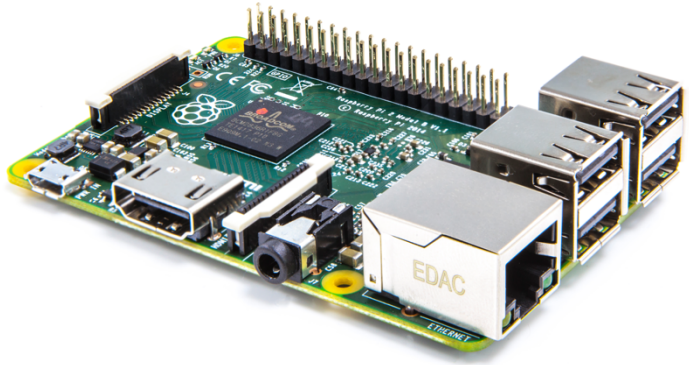
Reference - Abo-Zahhad, M., Sabah M. Ahmed, and Sherif N. Abbas. "A New EEG Acquisition Protocol for Biometric Identification Using Eye Blinking Signals." (2015).

Workflow

EEG

Neurosky Mindwave

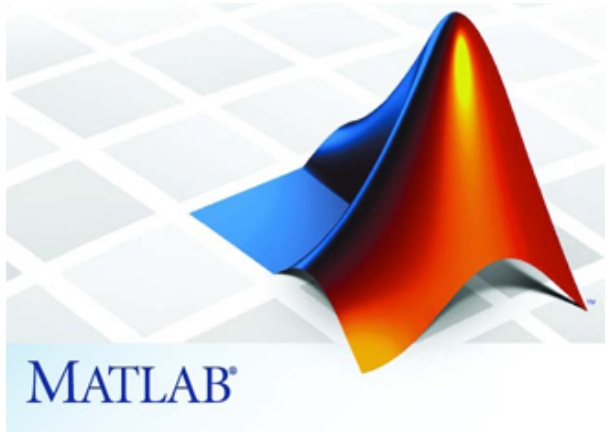
Bluetooth



Raspberry Pi

Ethernet

Processing !



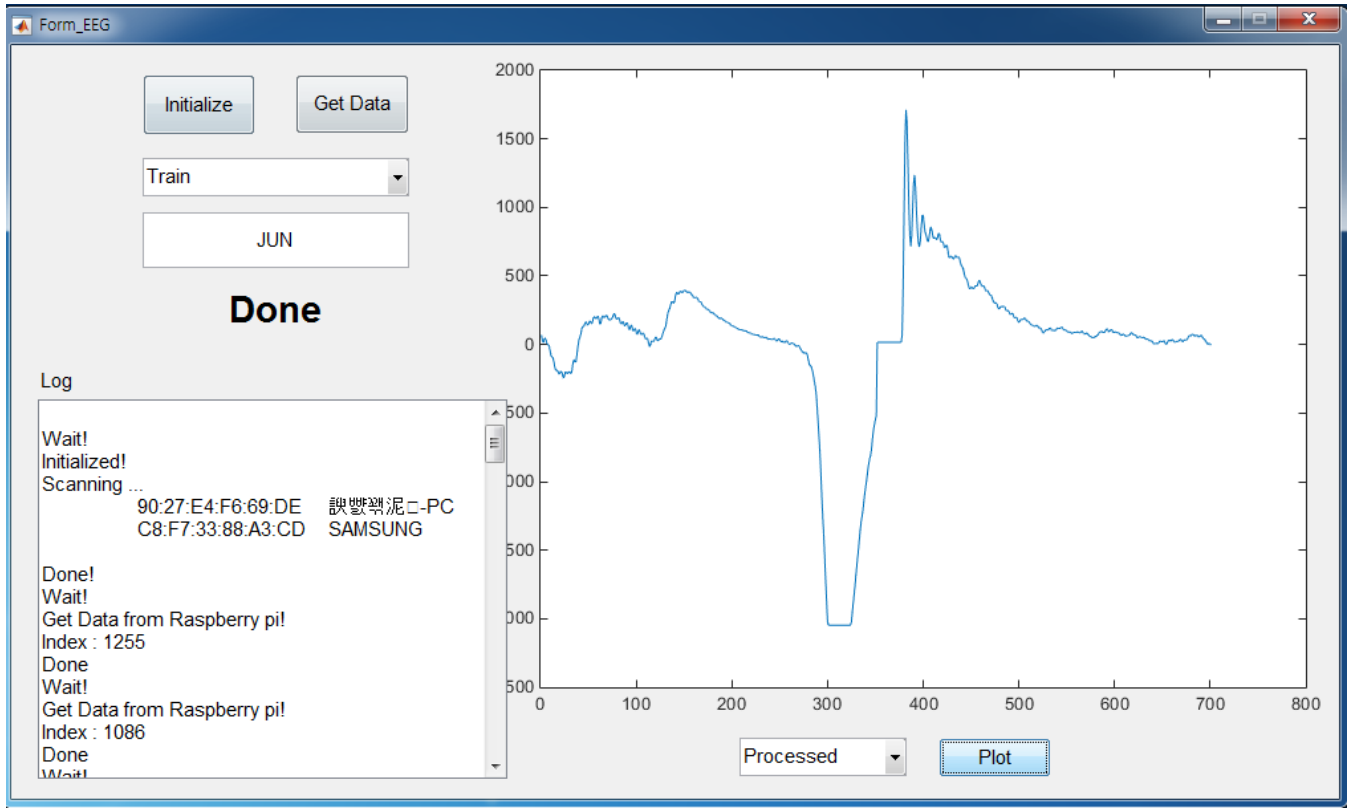
MATLAB

Workflow

Train Data

Save Information

Identify !



Application to Motorcycle Helmet

Motorcycle Helmet

EEG Detector

CORRECT

FALSE

Future Prospect

- Process Algorithm ONLY with Raspberry pi (Totally Embedded System)

- Assemble EEG Detector and Helmet

Reference

- Abo-Zahhad, M., Sabah M. Ahmed, and Sherif N. Abbas. "A New EEG Acquisition Protocol for Biometric Identification Using Eye Blinking Signals." (2015).

- Su, Fei, et al. "EEG-based personal identification: from proof-of-concept to a practical system." *Pattern Recognition (ICPR), 2010 20th International Conference on*. IEEE, 2010.

Thank You!