A computational platform for emotion recognition in the wild

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Abstract

This project aims to explore the practical use of emotion recognition in the wild with actual psychiatric evaluation of the system's prediction. To achieve this, a data collection platform that seamlessly collects user's personal data extracted from the user's mobile phone and physiological signals extracted from wearable sensors. The collected data can then be used to create machine learning models that recognize user's emotions in real time. The user's emotions can then be used by psychiatrists to evaluate the her emotional state in real life settings.

Discussion

- Data is collected at different sampling rates:
  - mobile sensors (every 20 seconds)
  - audio (20 seconds per minute)
  - brain signals (continuously, when the sensor is connected)
- Popup appears every two hours asking the user for her emotion (Happy, Sad, Angry, Anxious), or she can enter her emotion at any time
- All data is collected and stored on the user's phone
- Checklist is displayed to the user and whatever is checked gets uploaded to Dropbox to maintain secure control over her data
  - Audio
  - Key logs
  - GPS
  - Time spent on different applications
  - EEG sensors
  - Mobile sensors

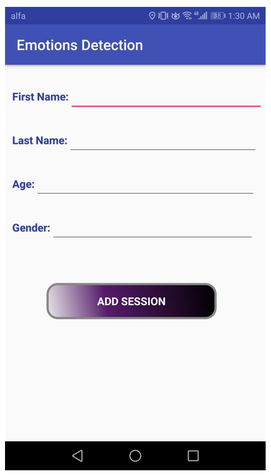
Technologies

Software:
- Android Studio
  - Java-XML
- DropBox API
- Android sensors framework
- Android Accessibility service
- Sqlite
- Csv File

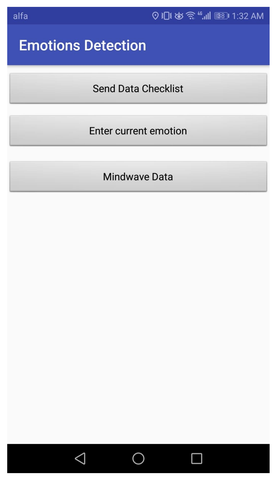
Hardware:
- MindWave sensor (NeuroSky)
- Phone sensors

Results

- The application was tested by the developers over of one week
- The developers chose to upload all the collected data to Dropbox including the ground truth annotations
- The size of the collected data was about 25 MB per day
- For future work, more sensors will be integrated to the application like Galvanic Skin Response and Heartbeat
- Going forward, the platform will be used to run a real user study once the IRB process is complete.



Enter your Information



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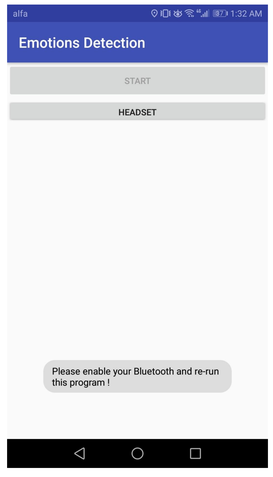
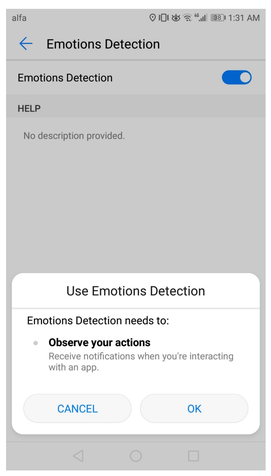
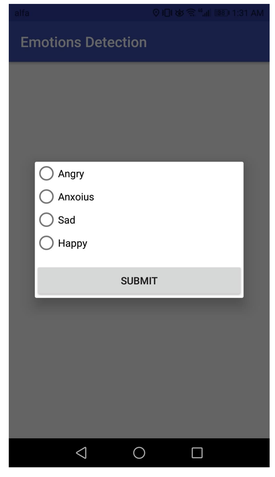


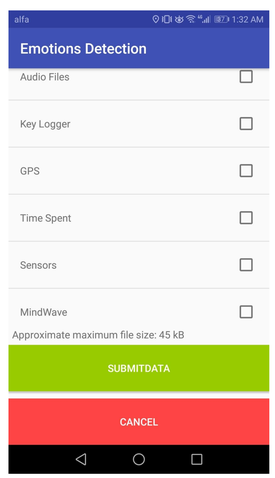
connect your phone to brain sensor



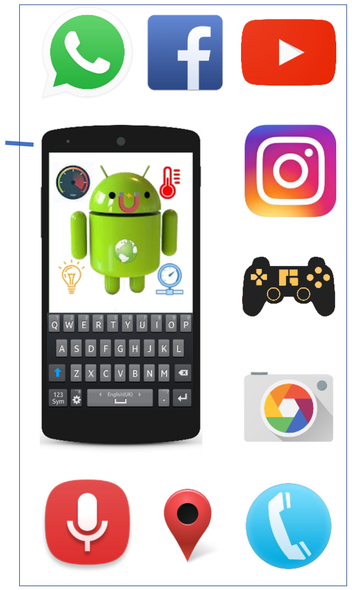
Activate Emotions Detections



Select your emotion



Select the data you want to send



Selective Upload

Dropbox