Meeting Minutes
Date: 15 May 2019
Location: 1008B, Electrical Engineering, Imperial College
Present:

Academic Supervisor	Dr Steve Wright
Project Group	Joshua Rizal Chan, Lua Ying Hao, Ng Yi Song, Patrick John Chia, Joel Yeow

Attachments

1. Meeting with Academic Supervisor 1 page report

Agenda

1. To provide Dr Wright with update on project progress
2. To request assistance with problems encountered

Minutes

Item	Action By
1. **Progress Update**. Updated Dr Wright on project progress, provided him with document outlining current and future work. ● Summary of meeting minutes from first meeting with client (IBM team) at Hursley ● Updates on further progress after meeting	None
2. **Power Issue with Jetson**. Outlined power problem with Jetson to Dr Wright, requested for assistance. ● Micro USB connection on Jetson provides insufficient power for Jetson to run at full potential ● Increasing power consumption of Jetson prevents it from booting up when using power pack with micro USB ● Might have to connect Jetson to mains, however this compromises portability of device, one of the project requirements ● Have ordered power adapter ● Might require power pack meant for charging laptops ● To research USB to barrel plug, power banks with higher amperage	Joshua Chan, Ng Yi Song
3. **Deliverables Presentation**. Presentation next week (21 May 19) for project deliverables.	None
4. **Next Meeting**. Arranged next meeting in one fortnight. Project group to provide update on leaflet and project progress.	None

Action Items

S/N	Para	Action	Party	Deadline
1.	2	To research USB to barrel plug, power banks with higher amperage	Joshua Chan, Ng Yi Song	-

Meeting on 3 May 19
Location: IBM Hursley
Present: All members of group, John McNamara, Louise Cooper, Emily Larkin

- Administrative items
    - Set up Trello accounts to receive materials (for example, regarding using IBM Cloud, Node Red) from IBM team, set up Slack accounts for communication
    - Skype meeting and blogpost every Friday to keep IBM team updated on progress
- Materials
    - Received Raspberry Pi, toy elephant, and a box of miscellaneous electronic parts from a previous IBM project
    - To receive Jetson (small Nvidia GPU) and Pi camera from IBM in a week
    - To purchase smaller electronic components (eg switches) on our own
- Makaton sign language
    - To start with understanding 5 basic signs as proof of concept, suggestions for signs to understand from Louise's sister's care home
    - Can start on creating video dataset for 5 basic signs, also to look for online tutorial videos to make dataset more diverse
- Miscellaneous requirements
    - Programme user interface for programmable commands, to be used with hardware switches placed on the device
    - To consider integrating other sensors
        - Ultrasonic sensors to detect proximity of user and only begin processing camera feed when user is close to device
        - Ambient light and sound sensors to perform environmental analysis, determine what might trigger adverse responses from users

Subsequent Updates
- Machine learning updates
    - Tested several algorithms on a subset of the 20BN-JESTER Dataset containing 6 hand gesture classes (5 different classes and 1 additional class for no gesture) :
        1. CNN+LSTM using MobilenetV2 as CNN yielded validation accuracy of 82.94%
        2. CNN+LSTM using InceptionV3 as CNN yielded validation accuracy of 83.57%
    - Implemented several other algorithms such as C3D and ConvLSTM +CNN that offered no significant improvements
    - In the midst of implementing data augmentation techniques such as masking using a YOLO network to help CNN focus on the region of interest
- Training dataset
    - 2975 videos for 5 actions (595 videos for each action)
    - Most videos from 3 group members, some limited diversity on remaining videos, diversity of training dataset to be worked on
- Server
    - Have set up 2 environments on Google Cloud Platform each with a Nvidia K80 GPU and installed parallel computing platform CUDA and cuDNN to exploit parallel computing capabilities offered by GPUs in training the network.
- Administrative
    - Received Jetson Nano and Pi camera from IBM team
    - Working on setting up Jetson nano