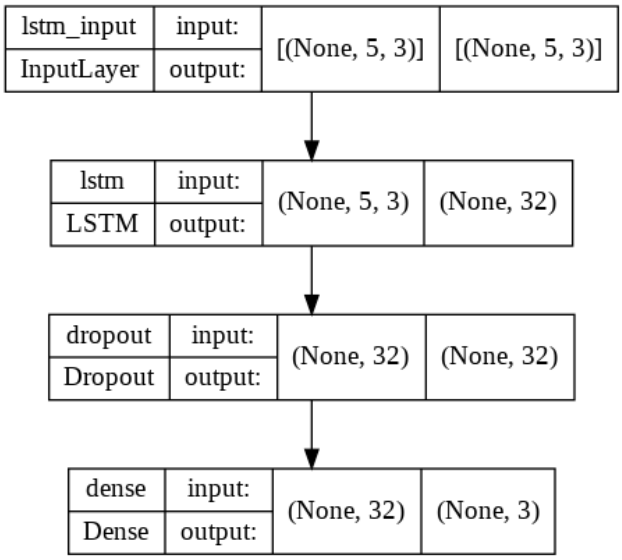
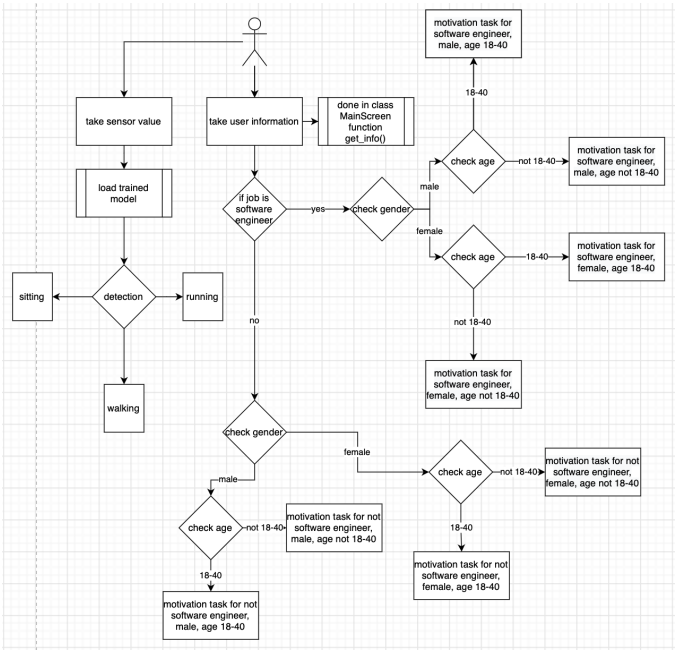
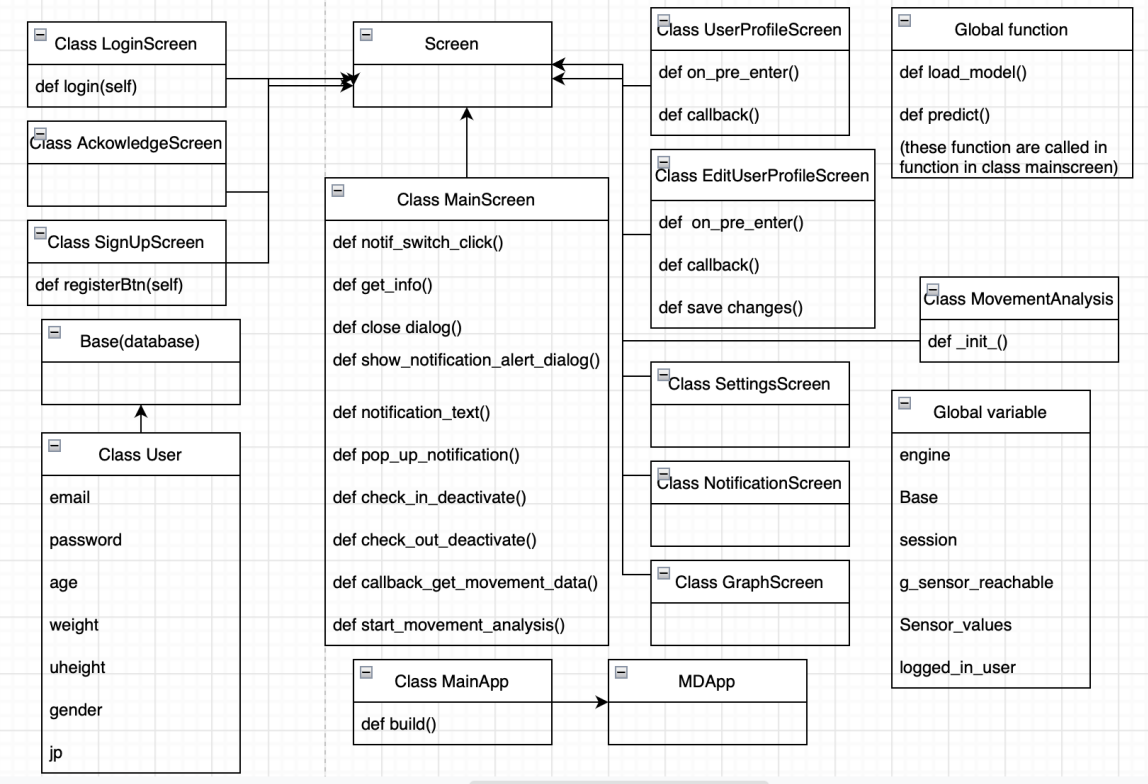
1. In this project, in order to gather data from the phone, the app Phyphox was installed and used to capture accelerometer value from all x, y, z direction. From the collected sitting, walking, running dataset, it was first converted from .xlsx file to .csv file. Second, the dataset was converted to numpy array and split into snippets and labeled.
2. Below is an image of the finalized AI model architecture. LSTM was used for dealing with continuous values. Dropout layer helps to prevent overfitting. The model was trained with 3 epochs (for some unknown reasons, the training froze starting from the 4th epoch), batch size of 5, number of hidden layers of 32. The accuracy was around 96 percent.



3. Flow chart of motivation task manager and movement analysis



4. Class diagram



5. Most important functions: login() checks if username and password matches the database, if yes, then login granted. Get_info() extracts user information from the database and according to a logic, 5 motivation tasks will be given. Start_movement_analysis() loads the trained model and predict movement accordingly. Pop_up_notification() brings up notification for the motivation tasks that are selected.
   Third party sources: plyer == 2.0.0(for accelerometer value and notification), kivymd == 0.104.2(for constructing the application), kivy == 2.1.0(for constructing the app), numpy == 1.23.1(dealing with data), tensorflow-macos == 2.9.2(for training and loading model), pync == 2.0.3(for sending notifications in macos).
6. Plyer == 2.0.0 is copyrighted by kivy team, that need to be taken into consideration, the rest of the packages are open-source (MIT, Apache 2.0)
7. The AI model was trained locally using tensorflow keras. Afterwards, the model is saved into pb files and loaded to the app. The data is stored in csv files and then converted to numpy array.
8. 1. title = fitness_application ; 2. package.name = fitness_application ; 3. source.include_exts = py,png,jpg,kv,csv ; 4. version = 1.0.0 ; 5. orientation = portrait ; 6. osx.python_version = 3.8.13 ; 7. osx.kivy_version = 2.1.0, ; 8. fullscreen = 0 ; 9. log_level = 2 ; 10. warn_on_root = 1