METIS
User Manual

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Introduction

Tourette Syndrome is a neurodevelopmental disorder that begins in childhood or adolescence. It is characterized by multiple motor and vocal tics. Common tics are blinking, coughing, throat clearing, sniffing, and other facial movements. The tics often go unnoticed by casual observers.

As for today, there is no known way for quantifying the percentage of functionality among people who have this disorder.

This need ignited the birth of 'Metis', an application for data gathering about young Tourette Syndrome patients.

The project is led by <u>Professor Izhar Bar-Gad</u> and <u>Yocheved Loewenstern</u> of the 'Gonda multidisciplinary brain research and studies center'.

The application includes games and videos for the experiments and the patients engages with them while the data is gathered on the fly. The list of wanted sensors for each patient is decided by the researcher and a video of the patient is being recorded for each session. After the data is gathered by the application, it will be analyzed by the researchers in order to quantify the level of the disorder. The end goal is to have scaling of the syndrome.

Disclosure: The goal of the application is experimental and therefore it should not be used without a dedicated researcher who knows the legal limitations and the procedure of the experiment it was invented for.

Installation Guide

a. The application is only supported by phones with Android operating system, and was tested specifically on **SAMSUNG Galaxy A50** model.

b. Before the first run of the application, the user must add the basic files, following these steps:

    0. Connect the phone (USB/USB-C cable) to the PC.

    1. Enter This PC -> SAMSUNG Galaxy A50.

    2. Navigate to internal storage -> Android -> data -> com.example.metis -> files -> data

    3. Inside this folder add 4 folders:

        3.1 default_image – in this folder, enter an image that will be set as default.

        3.2 JSONs – enter an applicationData.json file

        3.3 games - inside this folder, create a folder that called images, for this folder add pictures with the names of the games.
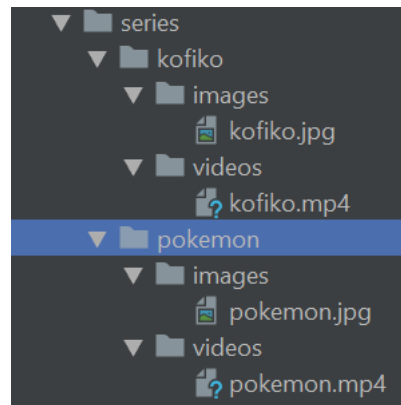
        For example:
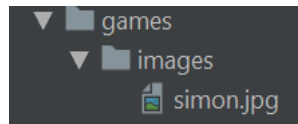
        3.4 series - inside this folder, create a folder for each series to be added to the application.
        For each folder add two folders with the following names:
        a. images
        b. videos
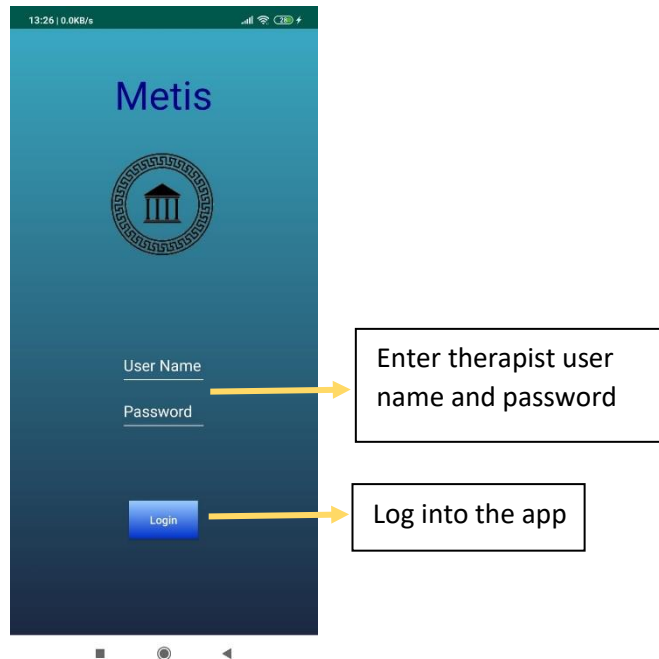   In each folder you can add pictures and videos, based on your series.

For example:

c. Grant permissions to the application on the phone, as follows: settings -> applications -> metis -> "shown above other details" - allow this permission.
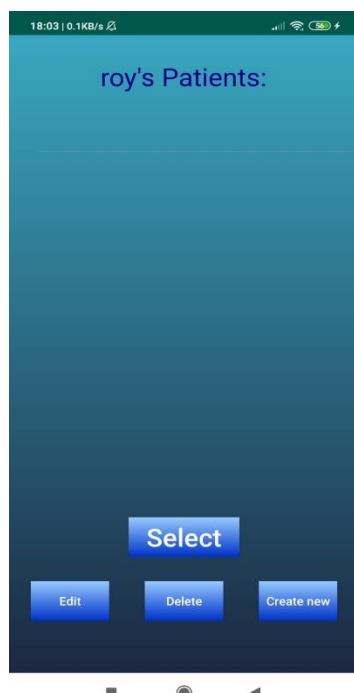
User manual

Therapist windows

1. Login Window

Enter therapist user name and password

Log into the app

2. Setting up a patient Window

If it is the first time of the therapist, this window will be empty of names and will appear as in the image below. We will use the "Create new" button to define a new patient.

3. Patient Data Window

   After clicking the "Create new" button we will display the window and fill in the details, as presented in the image below.

4. Series Selection Window

After clicking the Next button, we will go to a window where you have to configure the series that the patient can see.

Series offered for selection can be selected by marking the adjacent square

After selecting the desired series, click Next

Choose series to display:

☐ kofiko
☐ pokemon
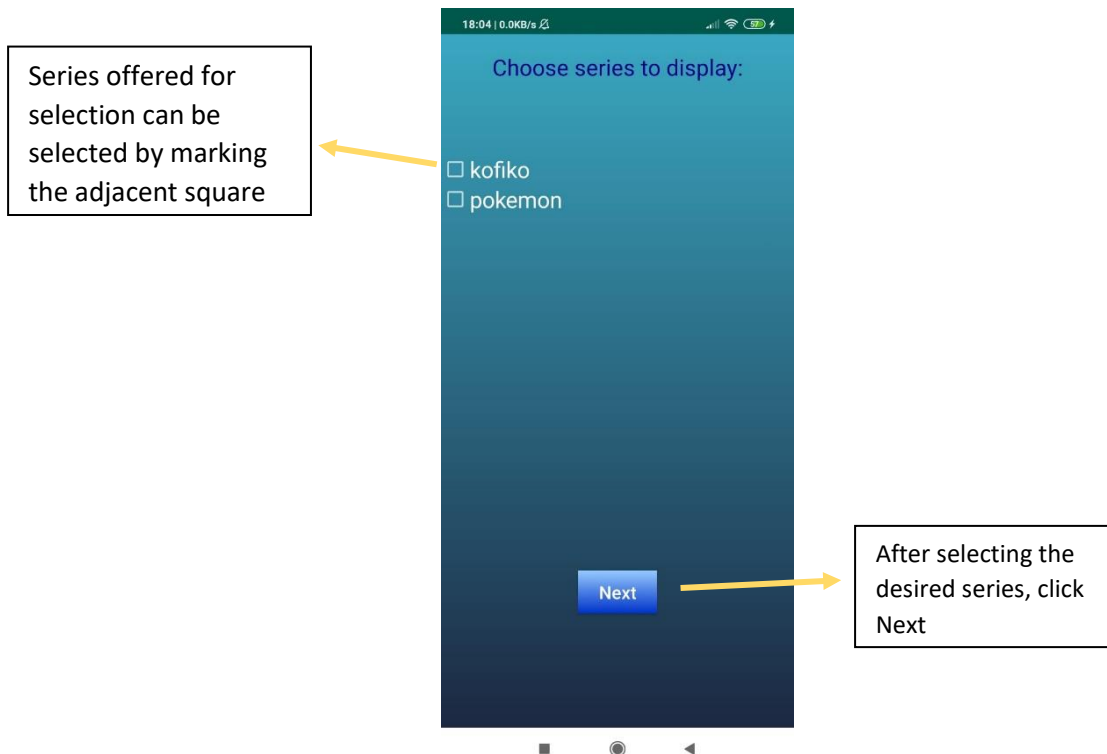
Next

5. Sensor Selection Window

After clicking Next, we will go to the last patient setup window to set which sensors should be working when the patient is using the app.

Choose sensors to monitor:

Sampling Rate

100

☐ BMI120 Accelerometer
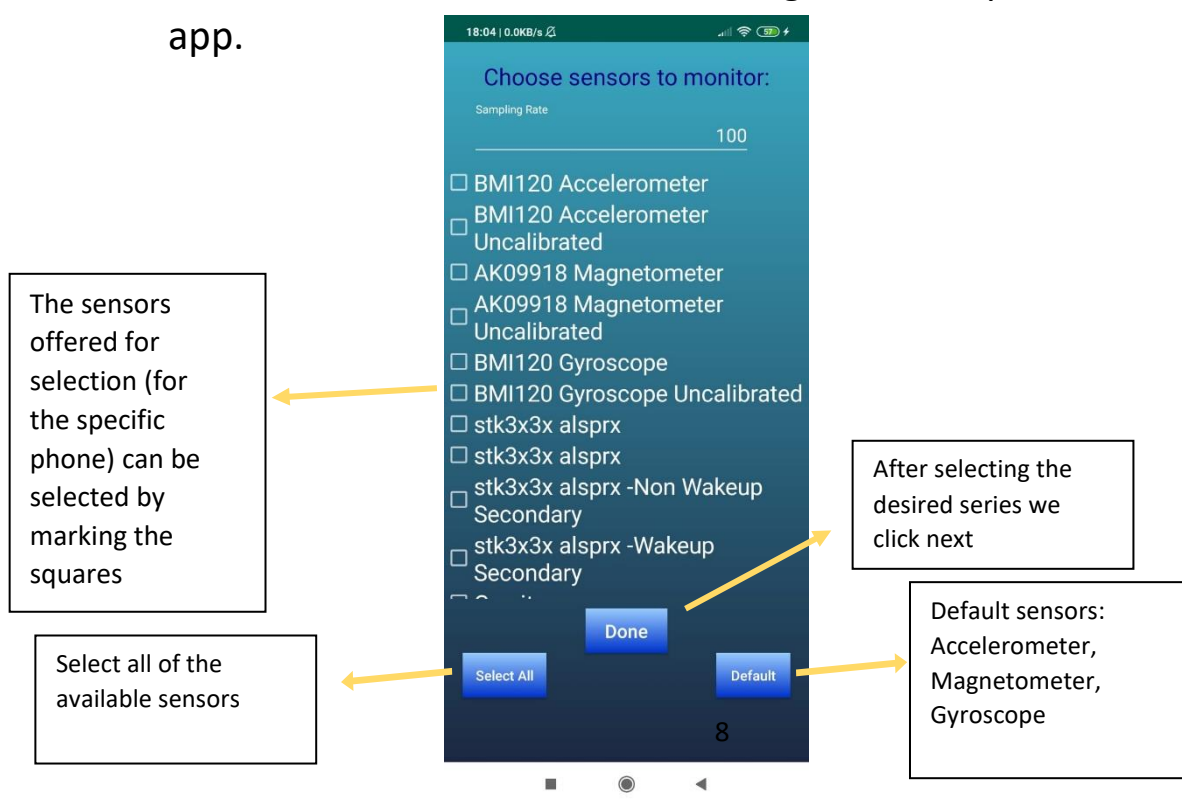☐ BMI120 Accelerometer Uncalibrated
☐ AK09918 Magnetometer
☐ AK09918 Magnetometer Uncalibrated
☐ BMI120 Gyroscope
☐ BMI120 Gyroscope Uncalibrated
☐ stk3x3x alsprx
☐ stk3x3x alsprx
☐ stk3x3x alsprx -Non Wakeup Secondary
☐ stk3x3x alsprx -Wakeup Secondary

The sensors offered for selection (for the specific phone) can be selected by marking the squares

After selecting the desired series we click next

Select all of the available sensors

Done

Select All

Default

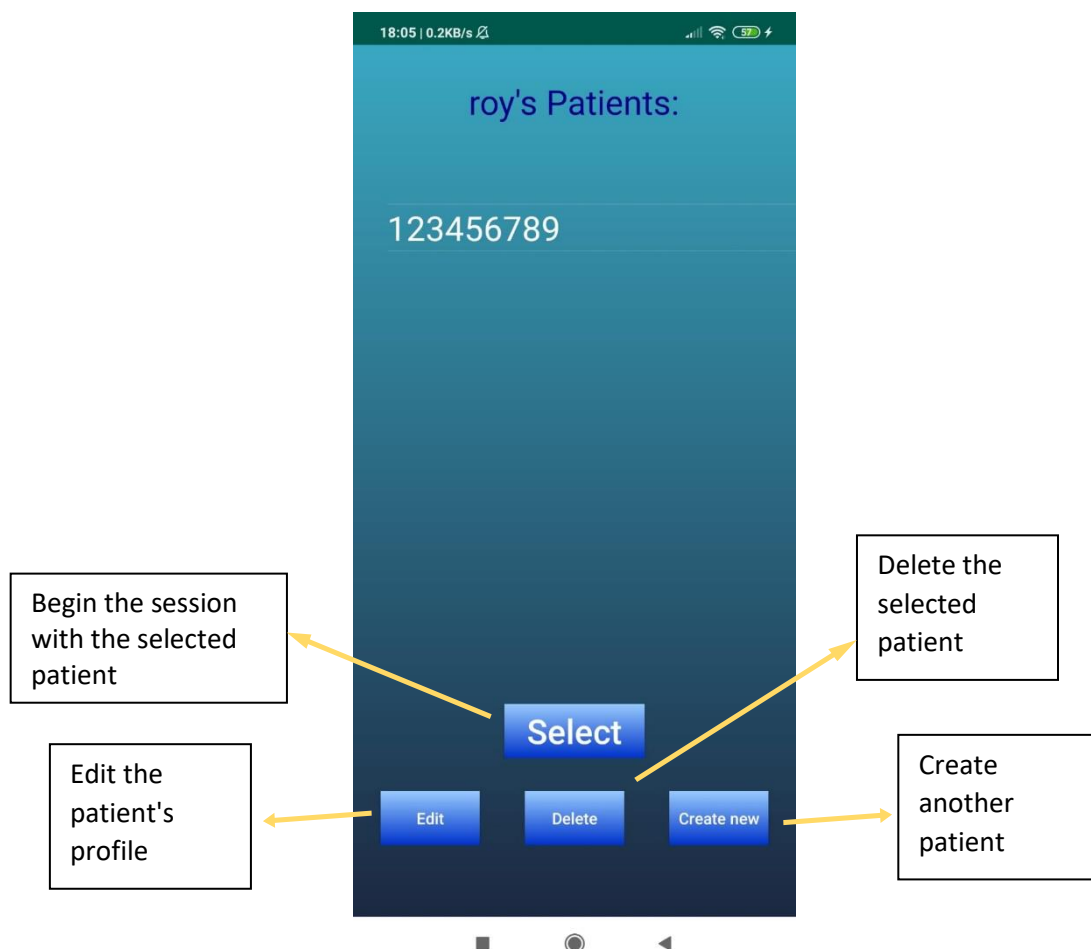Default sensors: Accelerometer, Magnetometer, Gyroscope

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6. Setting up a patient window

After setting up the patient user we will return to the main menu which should look like the image. We'll mark the patient with whom we want to work with our finger.

Instructions:

- Press Edit - If we want to edit the patient's profile and return to Step 3.
- Press Select - to start the test.

Begin the session with the selected patient

Delete the selected patient

Edit the patient's profile

Create another patient
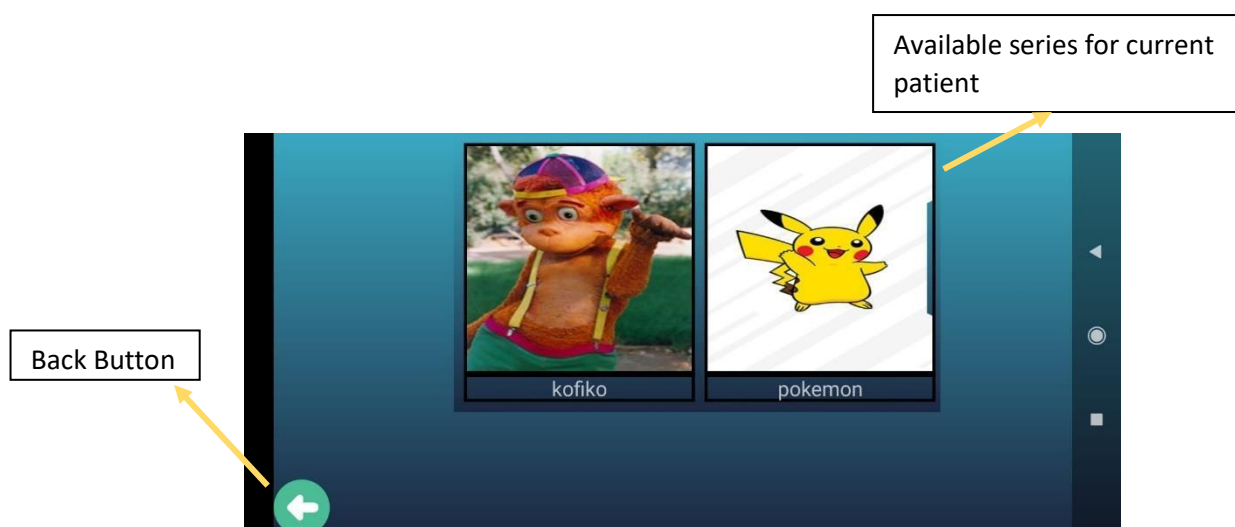
Patient windows

7. Main Menu Window

After pressing the Select button the use of the cellphone goes to the patient's use. The camera and sensors will start operating in this stage. The main menu for the patient:

Open games menu

Open videos menu

Finish current patient session
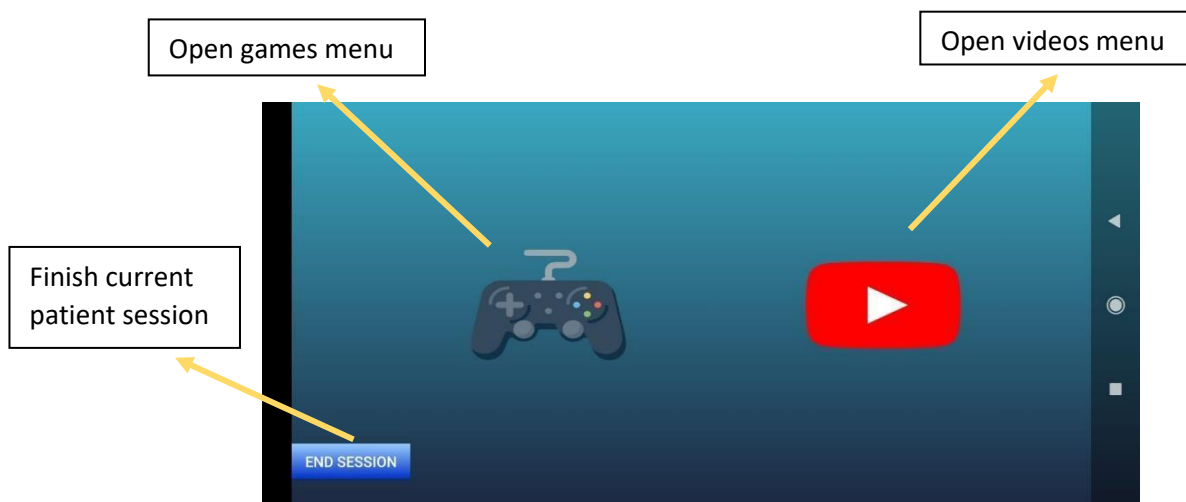
END SESSION

The 'END SESSION' button is for the therapist use only, and when the button is pressed a popup window will appear, asking for the therapist's password. When the therapist ends the session the application will close, requiring reactivation for the next session.

8. Series Menu Window

Pressing the videos button leads to a screen in which the patient can choose which series/video he wants to watch.

Available series for current patient

Back Button

kofiko   pokemon

9. Games Menu Window

Pressing the games button leads to a screen in which the patient can choose which game he wants to play.

Available games