

Static Gesture Dataset

Static gestures are the kind of gestures where the hand remains still during gesture performance. The static gesture dataset contains the sensor data for **14** static gestures. These data were collected from **35** volunteers (both male and female) with age ranging from 21 to 32 years. A brief description of the dataset is given in the table below.

Number of Gestures	14
Number of Participants	35 (25 male and 10 female)
Sensors	5 Flex, 1 3-axis accelerometer and 1 3-axis Gyroscope

The Dataglove

The dataglove has five SEN-10264 flex sensors over the five finger joints and a MPU-6050 Inertial Measurement Unit (IMU) sensor which contains 3-axis accelerometer and 3-axis gyroscope in the same package. For sensor data processing and connectivity, we used DOIT Esp32 DevKit v1 board. The processing unit can achieve maximum clock speed of 240MHz which enables real-time application with gesture detection. For portable power source, we have used a 7.4V Lithium Polymer (LiPo) battery.

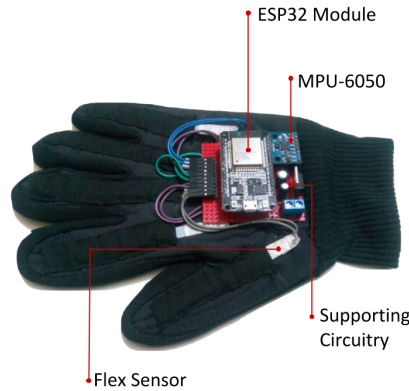


Figure 1: The Dataglove

The Gestures

The gestures included in this dataset are *come here*, *go away*, *fist*, *fingers crossed*, *cash*, *one*, *two*, *three*, *four*, *five*, *excellent*, *stop*, *thumbs up* and *thumbs down*. These gestures are shown in the figure below.



Figure 2: The Gestures

Dataset File Structure

The dataset file is structured in comma separated (.csv) file format. file can be found inside the **Dataset** directory with the filename of **dataset.csv**. Each column of the file contains data from a specific sensor. The sensor readings from the accelerometer and gyroscope were combined to calculate the orientation angles (yaw, pitch and roll). The angles values are provided in their respective columns. The last column contains the corresponding *labels*. The structure of the dataset file is shown in the figure below.

	Flex_1	Flex_2	Flex_3	Flex_4	Flex_5	Yaw	Pitch	Roll	Gesture
0	-2.0	-4.0	-18.0	0.0	8.0	89.0	6.722235	6.360457	Come Here
1	-2.0	0.0	-16.0	2.0	12.0	89.0	6.700003	6.466939	Come Here
2	-8.0	-8.0	-18.0	0.0	12.0	89.0	6.635451	6.367587	Come Here
3	2.0	8.0	-8.0	8.0	12.0	89.0	0.968758	5.642951	Come Here
4	10.0	8.0	-8.0	8.0	12.0	89.0	2.179462	6.292349	Come Here

Figure 3: Static dataset file format

The dataset file contains a total of 4238 rows or in other words 4238 samples. Since all the gestures in this dataset is static, windowing is **not** required for feature extraction.