

Milestone 4

By Cianna Grummer
SmartStride



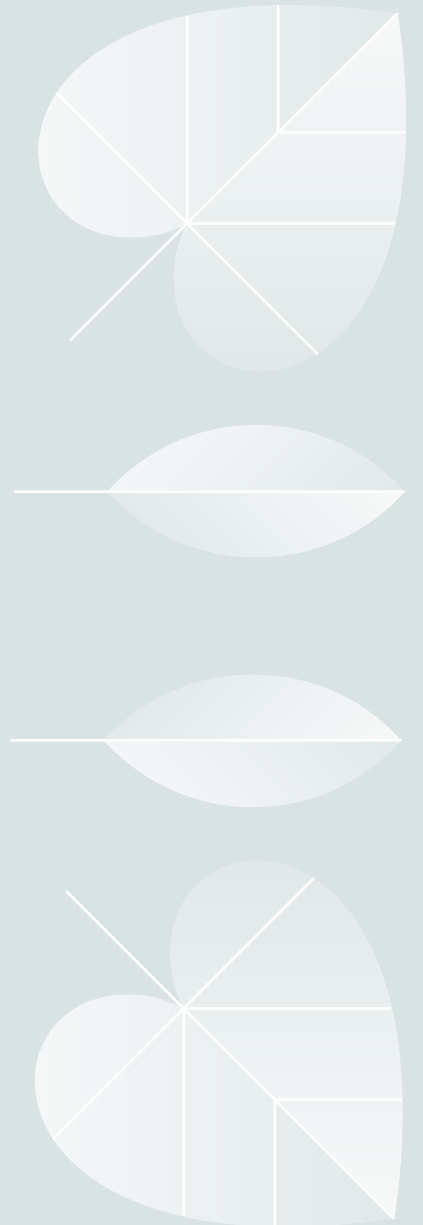


Milestone 4

Task	Progress	To Do
Setup AWS's IoT or S3	50%	Move to future works
Connect Raspberry Pi to lambda function	100%	N/A
Create a new webpage for drag and drop	100%	N/A
Create drag and drop functionalities	100%	N/A
Connect device to website	35%	Collect data from sock (Bela) and finish ML (Alec)

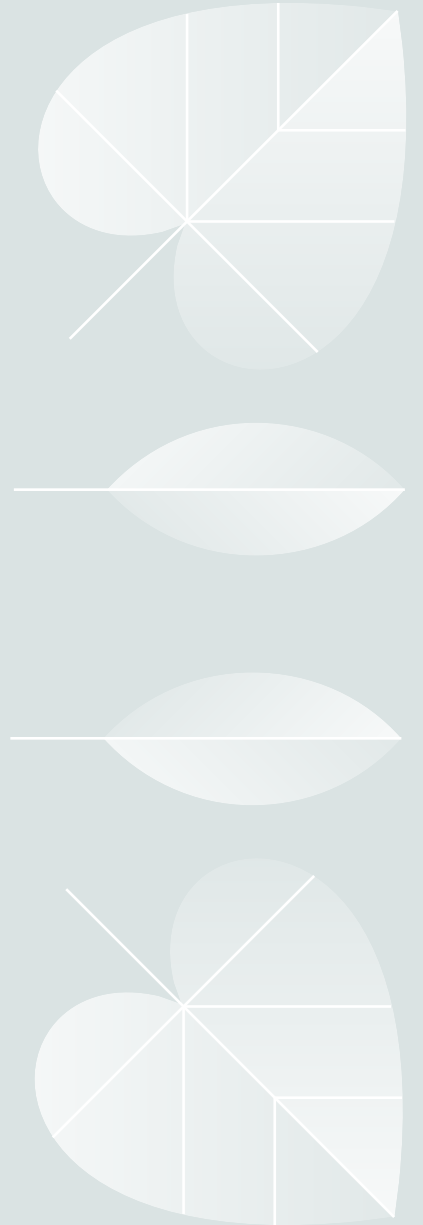
S3 Bucket

- Holds data before uploading it to database
 - *Ensures no data lost in large uploads and with many uploads*
- Should be used with many devices
- Did not complete due to budget issues
 - *Can accomplish all goals without S3 Bucket*
 - *Will be moved to future goals*



Connecting Raspberry Pi

- Created an app on raspberry pi for easy use
 - *Used Python and Tkinter to create functions and GUI*
 - *User opens app and types in their username and clicks start monitoring*
 - Message box tells the user if any files are found and if upload was successful
 - *App checks folder called "CSV Data"*
 - This is where data from the ML will be saved
 - *Connects to Drag and Drop API to handle upload of data*



New page for Drag and Drop

- New page is accessible through patient dashboard

Button called "Upload CSV File"

The screenshot displays the SmartStride application interface, which includes sections for Patient Information, Progress Graph, Treatment Goals, Severity Assessment, and buttons for Access Device User Guide and Upload CSV File. A MySQL Workbench window is overlaid on the application, showing a query editor with the following SQL code:

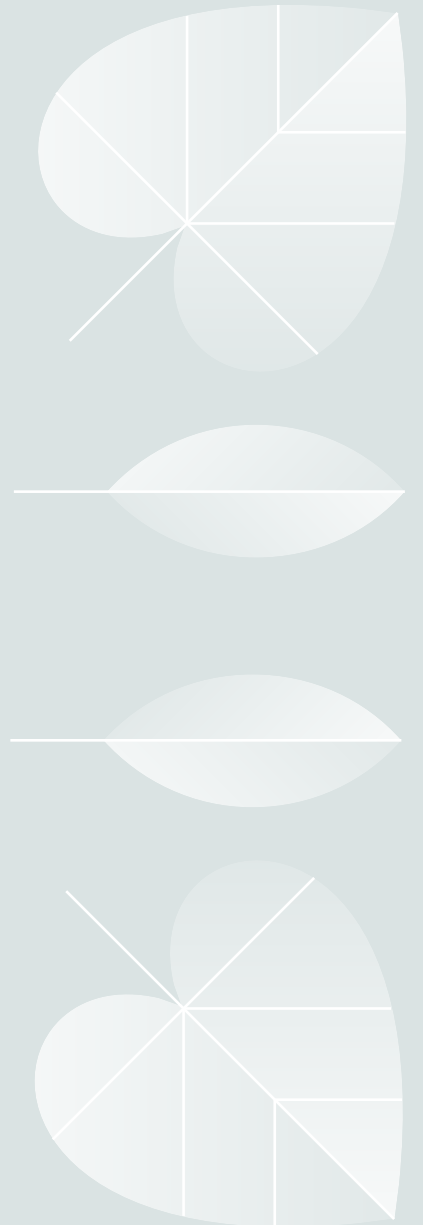
```
1 use patient_data;
2 select * from patient_session_data;
3
4 delete from patient_session_data where patient_id = 'cgrummer';
5
6
7
8
9
10
11
12
13
14
```

The Result Grid shows the following columns: prime, session_id, patient_id, time, acc_1_x, acc_1_y, acc_1_z, gyro_1_x, gyro_1_y, gyro_1_z, and emg_1_value. The bottom panel of the MySQL Workbench window displays the Action Output table:

#	Time	Action	Message	Duration / Fetch
1	12:33:12	delete from patient_session_data where patient_id = 'cgrummer'	Error Code: 1046. No database selected Select the default DB to be used ...	0.079 sec
2	12:33:23	use patient_data	0 row(s) affected	0.062 sec
3	12:33:23	select * from patient_session_data LIMIT 0, 1000	1000 row(s) returned	0.140 sec / 0.125 sec
4	12:33:28	delete from patient_session_data where patient_id = 'cgrummer'	33390 row(s) affected	0.469 sec
5	12:33:32	select * from patient_session_data LIMIT 0, 1000	0 row(s) returned	0.062 sec / 0.000 sec

Connecting Device to Website

- Raspberry Pi can upload files to database using Drag & Drop API and Lambda
 - *Lambda uploads CSV data as separate sessions*
- Only 35% completed
 - *Sensors are still broken*
 - *ML is having issues with template matching*



Milestone 5

Task	Progress	To Do
Update database structure	15%	Talk with group to see what data will be used
Define graphs	35%	Make necessary changes to HTML
Create pie chart	10%	
New page for past results	40%	Add the API calls to HTML and redirection links, refine looks
Create API and Lambda functionalities for pie charts	0%	Create Lambda and functions as well as API
Create API and Lambda functionalities for past results page	0%	Need to create lambda and API functions



Define Graphs

- Changes to be made:
 - *Rename EMG Analysis to "Gastrocnemius EMG Activity"*
 - *Remove "Gait Analysis with step classification" tile*
 - *Remove figures from "Last PT Session Details"*
 - *Pie Chart Visible to Patient and Doctor*
 - *Pie Chart will go under "Last PT Session Details"*
 - *Will put average ITW foot angle under "Last PT Session Details" (doctor)*
 - *The time series plot showing averages over 1 gait cycle for ITW vs Normal Step ($x = \text{time}$, $y = \text{angle (degrees)}$) (doctor)*



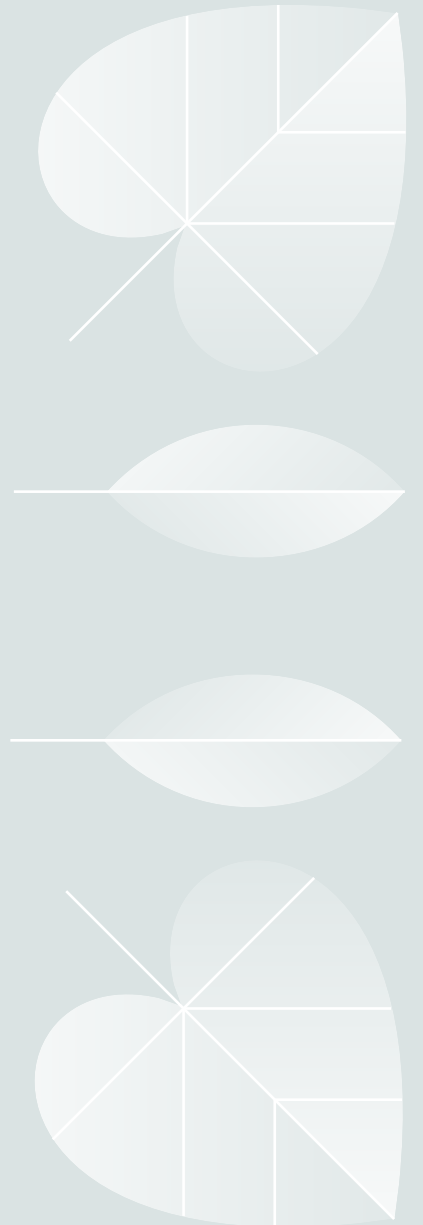
Pie Chart and Past Results Page

- Pie Chart will be visible to patient and doctors
- 100% of pie chart is the total steps taken in a month
 - *Pie chart will be divided into sections of Normal, Mild, Severe, and Extreme*
 - Labels will be changed
 - Step Identification will occur during the ML stage on the Raspberry Pi
- Past Results page will hold all past results separated by months
 - *Accessible through patient dashboard*



Device & ML Update

- Device not working due to past wires
 - *Would turn on but not take readings*
- Switching to coax wires
 - *Almost completed soldering for testing*
 - *Coax wires have a shield of metal braids around wires that prevents interference from reaching our signals*
- ML
 - *Can identify where and how many steps were taken*
 - *Currently working on extracting signal segments from the steps to feed into the ML*





Questions?
