

Sprint: 2

From: 04/22/2024 – 05/03/2024

Team: ERA: Emergency Response Assist

| Team Member | Tickets | Points |
|-----------------------|---------|--------|
| Jatin Madan | 3 | 12 |
| Vaishnavi Sunil Desai | 3 | 12 |
| Isha Ghiria | 2 | 10 |
| Sharvesh Patki | 3 | 12 |

Sprint Overview:

| Planned | | Completed | |
|---------|--------|-----------|--------|
| Items | Points | Items | Points |
| 11 | 46 | 11 | 46 |

Sprint Retrospective:

- What have you done during this sprint?
 - Jatin Madan
 - Jatin worked on building the Gunshot Detection Model for the ERA System. This model achieved an accuracy of 95%, with a 99.9% accuracy for detecting Gunshots.

| | | | | | CLASS | ACCURACY | |
|------------------|-----------|--------|----------|---------|-------|------------------|-----------|
| | | | | | 6 | Gun Shot | 99.248120 |
| | | | | | 7 | Jackhammer | 98.592540 |
| | | | | | 5 | Engine Idling | 97.226174 |
| | | | | | 4 | Drilling | 96.169916 |
| | | | | | 8 | Siren | 96.126482 |
| | | | | | 1 | Car Horn | 95.573770 |
| | | | | | 0 | Air Conditioner | 94.608960 |
| | | | | | 3 | Dog bark | 93.807829 |
| | | | | | 9 | Street Music | 92.512246 |
| | | | | | 2 | Children Playing | 91.739766 |
| | precision | recall | f1-score | support | | | |
| Air Conditioner | 0.98 | 0.95 | 0.96 | 1317 | | | |
| Car Horn | 0.94 | 0.96 | 0.95 | 610 | | | |
| Children Playing | 0.93 | 0.92 | 0.92 | 1368 | | | |
| Dog bark | 0.93 | 0.94 | 0.94 | 1405 | | | |
| Drilling | 0.96 | 0.96 | 0.96 | 1436 | | | |
| Engine Idling | 0.96 | 0.97 | 0.97 | 1406 | | | |
| Gun Shot | 0.94 | 0.99 | 0.97 | 532 | | | |
| Jackhammer | 0.96 | 0.99 | 0.97 | 1421 | | | |
| Siren | 0.99 | 0.96 | 0.97 | 1265 | | | |
| Street Music | 0.92 | 0.93 | 0.92 | 1429 | | | |
| accuracy | | | 0.95 | 12189 | | | |
| macro avg | 0.95 | 0.96 | 0.95 | 12189 | | | |
| weighted avg | 0.95 | 0.95 | 0.95 | 12189 | | | |

- Jatin also worked on developing an API Endpoint to Deploy and Test the Gunshot Detection Model

Execute

Clear

Responses

```

curl -X 'POST' \
  http://0.0.0.0:8000/upload/ \
  -H 'accept: application/json' \
  -F 'Content-Type: multipart/form-data' \
  -F 'audio_file=@99188-9-0-49.wav;type=audio/wav'

```

Test URL

http://0.0.0.0:8000/upload/

or response

Details

Response body

```
{
  "Detected": "Street Music"
}
```

Response headers

```

content-length: 27
content-type: application/json
date: Thu, 02 May 2024 18:42:14 GMT
server: uvicorn

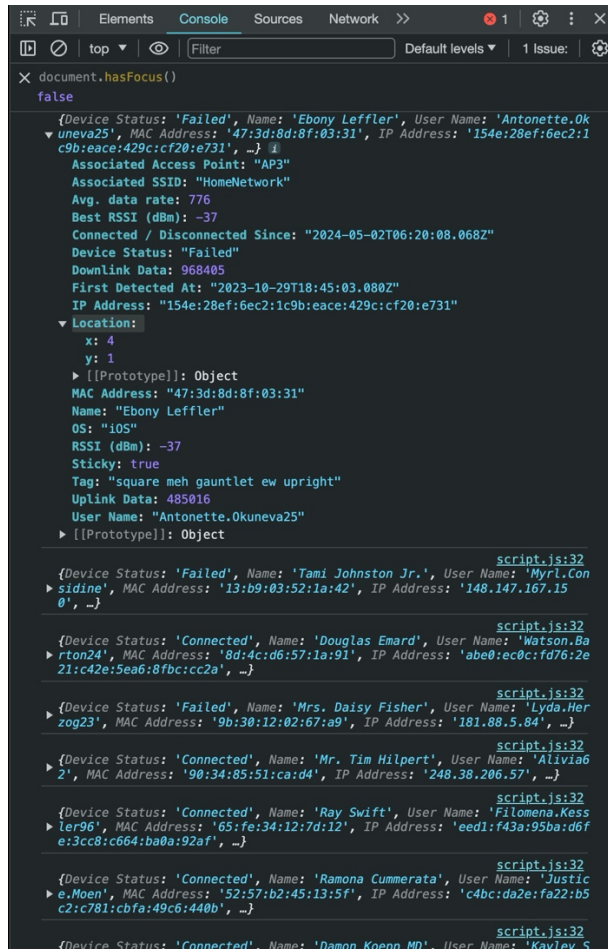
```

Links

Successful Response

No links

- Isha Ghiria
 - Isha worked on testing and validation of the Gunshot model develop by Jatin, providing feedback on the API as an end user.
 - Isha also worked on developing the backend for streaming live user location a map, to triangulate the user's approximate location for the administrators.



```
document.hasFocus()
false

{Device Status: 'Failed', Name: 'Ebony Leffler', User Name: 'Antonette.Okuneva25', MAC Address: '47:3d:8d:8f:03:31', IP Address: '154e:28ef:6ec2:1c9b:eace:429c:cf20:e731', ...}
  Associated Access Point: "AP3"
  Associated SSID: "HomeNetwork"
  Avg. data rate: 776
  Best RSSI (dBm): -37
  Connected / Disconnected Since: "2024-05-02T06:20:08.068Z"
  Device Status: "Failed"
  Downlink Data: 968405
  First Detected At: "2023-10-29T18:45:03.080Z"
  IP Address: "154e:28ef:6ec2:1c9b:eace:429c:cf20:e731"
  Location:
    x: 4
    y: 1
    [[Prototype]]: Object
  MAC Address: "47:3d:8d:8f:03:31"
  Name: "Ebony Leffler"
  OS: "iOS"
  RSSI (dBm): -37
  Sticky: true
  Tag: "Square meh gauntlet ew upright"
  Uplink Data: 485016
  User Name: "Antonette.Okuneva25"
  [[Prototype]]: Object

script.js:32
{Device Status: 'Failed', Name: 'Tami Johnston Jr.', User Name: 'Myrl.Considine', MAC Address: '13:b9:03:52:1a:42', IP Address: '148.147.167.150', ...}

script.js:32
{Device Status: 'Connected', Name: 'Douglas Emard', User Name: 'Watson.Barton24', MAC Address: '8d:4c:d6:57:1a:91', IP Address: 'abe0:ec0c:fd76:2e21:c42e:5ea6:8fbc:cc2a', ...}

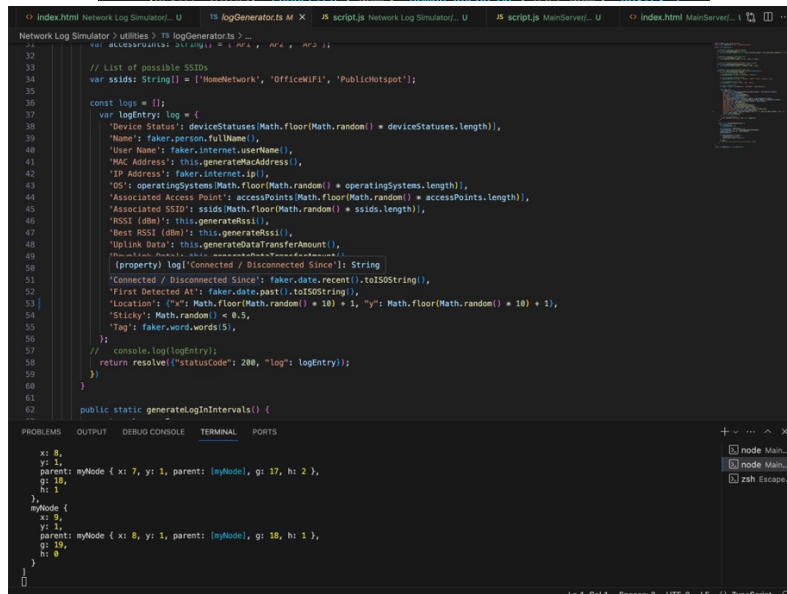
script.js:32
{Device Status: 'Failed', Name: 'Mrs. Daisy Fisher', User Name: 'Lyda.Hertzog23', MAC Address: '9b:30:12:02:67:a9', IP Address: '181.88.5.84', ...}

script.js:32
{Device Status: 'Connected', Name: 'Mr. Tim Hilpert', User Name: 'Alivia62', MAC Address: '98:34:85:51:ca:d4', IP Address: '248.38.206.57', ...}

script.js:32
{Device Status: 'Connected', Name: 'Ray Swift', User Name: 'Filomena.Kessler96', MAC Address: '65:fe:34:12:7d:12', IP Address: 'eed1:f43a:95ba:d6fe:3cc8:c664:ba0a:92af', ...}

script.js:32
{Device Status: 'Connected', Name: 'Ramona Cummerata', User Name: 'Justine.Moen', MAC Address: '52:57:b2:45:13:5f', IP Address: 'c4bc:da2e:fa22:b5c2:c781:cbfa:49c6:440b', ...}

script.js:32
{Device Status: 'Connected', Name: 'Damon Koepf MD', User Name: 'Kaview S...
```



```
Index.html Network Log Simulator... U  To logGenerators M X  script.js Network Log Simulator... U  script.js MainServer... U  index.html MainServer... U
Network Log Simulator > utilities > To logGenerators > ...
var ssidss: String[] = ['HomeNetwork', 'OfficeWiFi', 'PublicHotspot'];

const logs = [];
var logEntry: Log = {
  'Device Status': deviceStatuses[Math.floor(Math.random() * deviceStatuses.length)],
  'Name': faker.person.fullName(),
  'User Name': faker.internet.userName(),
  'MAC Address': this.generateMacAddress(),
  'IP Address': faker.internet.ip(),
  'OS': operatingSystems[Math.floor(Math.random() * operatingSystems.length)],
  'Associated Access Point': accessPoints[Math.floor(Math.random() * accessPoints.length)],
  'Associated SSID': ssidss[Math.floor(Math.random() * ssidss.length)],
  'RSSI (dBm)': this.generateRssi(),
  'Best RSSI (dBm)': this.generateRssi(),
  'Uplink Data': this.generateDataTransferAmount(),
  'Downlink Data': this.generateDataTransferAmount(),
  (property) log['Connected / Disconnected Since']: String
  'Connected / Disconnected Since': faker.date.recent().toISOString(),
  'First Detected At': faker.date.past().toISOString(),
  'Location': ({x: Math.floor(Math.random() * 10) + 1, 'y': Math.floor(Math.random() * 10) + 1}),
  'Sticky': Math.random() < 0.5,
  'Tag': faker.word.words(5),
};
// console.log(logEntry);
return resolve("statusCode": 200, "log": logEntry);
}

public static generateLogInIntervals() {
```

- Vaishnavi Sunil Desai
 - Vaishnavi Worked on establishing a Main ERA Server to work as the integration hub for every module to interface with.

```

48  * @returns void
49  */
50  public setMiddleware(): void {
51    this.apiApp.use(helmet());
52    this.apiApp.use(express.static('static'));
53    this.apiApp.use(cors({
54      origin: ['http://localhost:4200', 'http://127.0.0.1:4200', 'http://localhost:4400'],
55      credentials: true
56    }));
57    this.apiApp.use(cookieParser());
58    this.apiApp.use(express.json());
59
60    this.apiApp.use(express.urlencoded({ 'extended': true }));
61    // this.apiApp.use(express.static(path.join(__dirname, '..', 'static')));
62  }
63
64  /**
65   * The method setRouterMiddleware.
66   *
67   * @returns void
68   */
69  public setRouterMiddleware(): void {
70    this.apiApp.use('/v1', escapeRouteCtrl.router);
71    this.apiApp.use((err: Error, req: express.Request, res: express.Response, next: express.NextFunction) => {
72      if (err instanceof InputValidationError) {
73        return res.status(400).json({ more_info: JSON.stringify(err.errors) });
74      }
75    });
76  }
77
78  }
79

```

```

x: 0,
y: 1,
parent: myNode { x: 7, y: 1, parent: [myNode], g: 17, h: 2 },
g: 18,
h: 1
},
myNode {
  x: 0,
  y: 1,
  parent: myNode { x: 0, y: 1, parent: [myNode], g: 18, h: 1 },
  g: 19,
  h: 0
}
}

```

Ln 57, Col 37 Spaces: 2 UTF-8 LF

- Vaishnavi also worked on identifying possible Escape Route Detection Algorithms and Developed an algorithm based on her research to identify the safest path.

```

18  }
19  }
20
21  export class Astar {
22    public static manhattanDistance(current: myNode, goal: myNode): number {
23      return Math.abs(current.x - goal.x) + Math.abs(current.y - goal.y);
24    }
25
26    public static aStar(start: myNode, goal: myNode, maze: number[][]): myNode[] {
27      const openList: myNode[] = [start];
28      const closedList: myNode[] = [];
29
30      while (openList.length > 0) {
31        const current: myNode = openList.reduce((minmyNode, myNode) => myNode.f < minmyNode.f ? myNode : minmyNode, openList[0]);
32
33        if (current.x === goal.x && current.y === goal.y) {
34          // Reconstruct path
35          const path: myNode[] = [];
36          let myNode: myNode | null = current;
37          while (myNode !== null) {
38            path.unshift(myNode);
39            myNode = myNode.parent;
40          }
41          return path;
42        }
43
44        openList.splice(openList.indexOf(current), 1);
45        closedList.push(current);
46
47        const neighbors: myNode[] = [];
48        for (let dx = -1; dx <= 1; dx++) {
49          for (let dy = -1; dy <= 1; dy++) {
50            const newX = current.x + dx;
51            const newY = current.y + dy;
52            if (newX >= 0 && newX <= maze.length && newY >= 0 && newY <= maze[0].length && maze[newX][newY] !== 1) {
53              const neighbor = new myNode(newX, newY, current, current.g + 1, this.manhattanDistance(new myNode(newX, newY), goal));
54              if (!closedList.some(myNode => myNode.x === neighbor.x && myNode.y === neighbor.y)) {
55                neighbors.push(neighbor);
56              }
57            }
58          }
59        }
60
61        neighbors.forEach(neighbor => {
62          const existingNode = openList.find(myNode => myNode.x === neighbor.x && myNode.y === neighbor.y);
63          if (!existingNode || neighbor.g < existingNode.g) {

```

Ln 43, Col 13 Spaces: 4 UTF-8 LF (1) TypeScript

- Vaishnavi also worked on developing an API endpoint capable of streaming live WIFI access point logs to be consumed by the ERA application in real-time.

```

document.hasFocus()
false
▶ ulloagn/1', MAC Address: '17:45:a9:a7:17:80', IP Address: '70.194.218.218', ...}

script.js:32
{Device Status: 'Failed', Name: 'Ebony Leffler', User Name: 'Antonette.Ok
▶ uneva25', MAC Address: '47:3d:8d:8f:03:31', IP Address: '154e:28ef:6ec2:1
c9b:eace:429c:cf20:e731', ...}

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0', ...}

script.js:32
{Device Status: 'Connected', Name: 'Douglas Emard', User Name: 'Watson.Ba
▶ rton24', MAC Address: '8d:4c:d6:57:1a:91', IP Address: 'abe0:ec0c:fd76:2e
21:c42e:5ea6:8fbc:cc2a', ...}

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script.js:32
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e:3cc8:c664:ba0a:92af', ...}

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▶ e.Moen', MAC Address: '52:57:b2:45:13:5f', IP Address: 'c4bc:da2e:fa22:b5
c2:c781:cbfa:49c6:440b', ...}

script.js:32
{Device Status: 'Connected', Name: 'Damon Koepp MD', User Name: 'Kayley_S
▶ auer', MAC Address: 'e2:db:3e:e3:a1:4e', IP Address: '96.239.60.38', ...}

script.js:32
{Device Status: 'Failed', Name: 'Kate Deckow', User Name: 'Torey.Satterfi
▶ eld', MAC Address: 'be:d5:b5:3f:8f:73', IP Address: '196.251.54.97', ...}

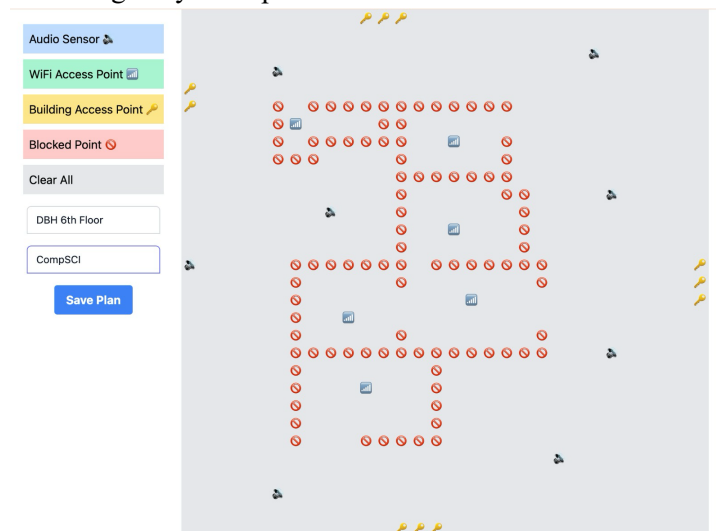
script.js:32
{Device Status: 'Connected', Name: 'Alonzo Schiller III', User Name: 'Mya
▶ _McDermott40', MAC Address: 'dd:35:8f:bb:6c:ac', IP Address: 'baa6:e6ea:9
f4e:afcf:c4cd:06bd:83ee:ca1d', ...}

script.js:32
{Device Status: 'Connected', Name: 'Salvatore Prohaska', User Name: 'Naye
▶ li_Boehm91', MAC Address: 'ab:78:a3:cb:3c:44', IP Address: '08bc:e52c:ff2
a:a7dd:6bce:e497:d2b8:1af4', ...}

Stream finished
script.js:21

```

- Sharvesh Patki
 - Sharvesh worked on creating the front-end interface for the ERA Floor Plan Input Module, providing an accessible and interactive user interface with options to design any floor plans.



- Sharvesh worked on creating the front-end interface for the ERA User Tracking Module, providing an accessible interface for administrator view and live user triangulation.
- What went well?
 - Despite, certain issues in task estimation, the team was successfully able to complete all the user stories for this sprint and make considerable progress on building the backbone of the ERA system.
 - The team demonstrated adaptability in responding to changes and adjusting plans as needed to address emerging issues or accommodate new requirements. This flexibility allowed them to maintain progress and keep the sprint on track.
 - The sprint provided opportunities for learning and growth, both individually and as a team. Challenges encountered during the sprint served as valuable learning experiences, helping the team identify areas for improvement and develop new skills.
 - The team applied best practices in agile development, such as conducting regular stand-up meetings, holding retrospectives, and using agile tools effectively. These practices contributed to the overall success of the sprint.
- What didn't go well?
 - Team
 - As some of the team members were working remotely, communication was a little difficult which led to a delay in completion for Front-End Development of User Input Module
 - The Task estimation for User Story 2 (Build a Back End for Streaming Live User Locations on Maps) turned out to be inaccurate, as we went into development for the module, and we had to update our story points to include the updated effort.
- What could/should be improved during the next sprint?
 - As we faced issue with one of the tasks in Task Estimation, we would be working on improving our estimates for the next sprint as they are crucial for better planning and execution. We would be involving the whole team during our sprint goal planning to have inputs on the task estimates.
 - We can divide our user stories into smaller atomic tasks, instead of grouping multiple tasks in one umbrella user story.

Sprint Backlog

| ID | Type | Owner | Summary | Status | Estimate |
|----|------------|-----------------|--|-----------|----------|
| 1 | User Story | Vaishnavi Desai | Establish the Main Server to interface with all 3 modules | Completed | 4 |
| 2 | User Story | Isha Ghiria | Build a Back End for Streaming Live User Locations on Maps | Completed | 6 |
| 3 | User Story | Sharvesh Patki | Build a Front End for Streaming Live User Locations on Maps | Completed | 4 |
| 4 | User Story | Sharvesh Patki | Build the Front End For Floor Plan Input | Completed | 4 |
| 5 | User Story | Sharvesh Patki | Expose and Endpoint to Consume the WiFi access point logs as a Pub-Sub Model | Completed | 4 |
| 6 | User Story | Vaishnavi Desai | Expose an Endpoint to generate Stream of Access Point Logs | Completed | 4 |
| 7 | User Story | Isha Ghiria | Test and Evaluate the Gunshot Detection Model | Completed | 4 |
| 8 | User Story | Jatin Madan | Build and Deploy Gunshot Detection ML Model API | Completed | 4 |
| 9 | User Story | Jatin Madan | Create an API using the Gun Detection ML Model | Completed | 4 |
| 10 | User Story | Jatin Madan | Create a Simulation Software to generate Network Logs | Completed | 4 |
| 11 | User Story | Vaishnavi Desai | Research on Escape Route Detection Algorithms | Completed | 4 |