

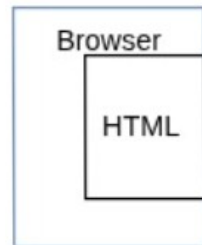
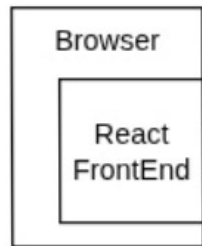


GeoStar BackEnd System

Functionality

- User Management
- User Authentication for front-end (API)
- Setup user event group
- Maintain user event group
- Record the GPS position information of users (API)
- Determine the latest position of users
- Inquire the latest position of user in specific event group(API)
-

System Architecture



Source Upload

API Access to Django with JWT security protection

BackEnd function

Adding https://

Nginx Web Server

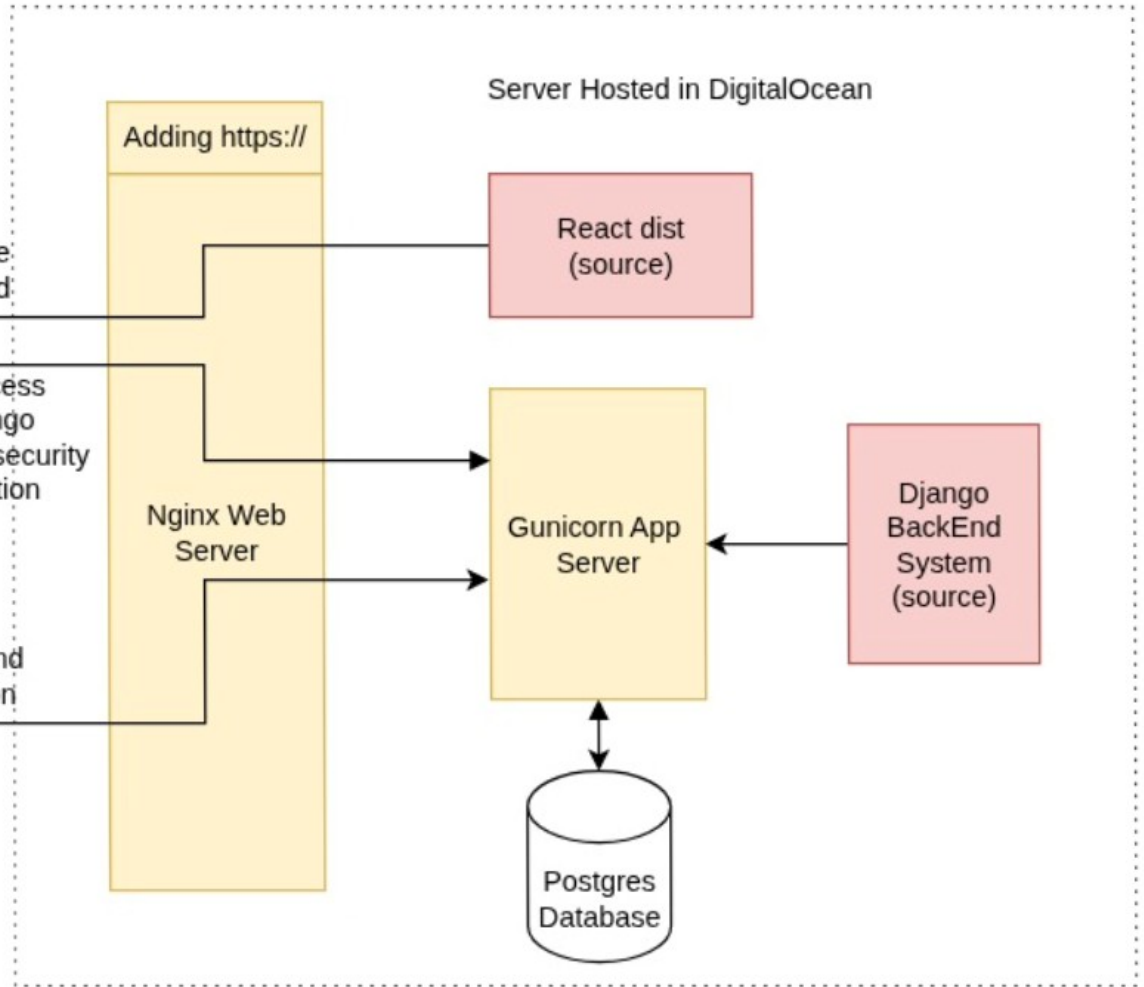
Server Hosted in DigitalOcean

React dist (source)

Gunicorn App Server

Django BackEnd System (source)

Postgres Database



Demo

Front-end Login

Windsurf: Refactor | Explain | Generate JSDoc | X

```
const handleLogin = async (e) => {  
  e.preventDefault();  
  setIsLoading(true);  
  setError('');  
  
  const cleanedHostIp = cleanHostIp(hostIP);  
  const apiUrl = `https://${cleanedHostIp}/api/token/`;  
  
  try {  
    const response = await axios.post(apiUrl, {  
      username,  
      password,  
    });  
  
    const { access, refresh } = response.data;  
    localStorage.setItem('access_token', access);  
    localStorage.setItem('refresh_token', refresh);  
    localStorage.setItem('host_ip', cleanedHostIp); // Store host IP for other components  
    setIsLoading(false);  
    setHostIP('');  
    setUsername('');  
    setPassword('');  
    onLoginSuccess();  
  } catch (err) {  
    setIsLoading(false);  
    setError(err.response?.data?.detail || 'Login failed. Please check your credentials or host IP.');
```

Front-end Capturing Geo Location

```
// Effect to periodically fetch and send GPS data
useEffect(() => {
  const interval = setInterval(() => {
    navigator.geolocation.getCurrentPosition(
      (position) => {
        const gpsData = {
          latitude: position.coords.latitude,
          longitude: position.coords.longitude,
          altitude: position.coords.altitude || null,
          accuracy: position.coords.accuracy || null,
        };

        // Store GPS data in localStorage
        localStorage.setItem('gpsData', JSON.stringify(gpsData));
        setStatus('GPS data captured');

        // Send data to backend
        sendGPSData(gpsData);
      },
      (error) => {
        console.error('Geolocation error:', error.message);
        setStatus(`Geolocation error: ${error.message}`);
      },
      { enableHighAccuracy: true, timeout: 10000, maximumAge: 0 }
    );
  }, 15000); // Every 15 seconds

  // Cleanup interval on component unmount
  return () => clearInterval(interval);
}, []);
```

Front-End Sending

```
const sendGPSData = async (gpsData) => {
  try {
    const token = localStorage.getItem('access_token');
    if (!token) {
      throw new Error('No access token found. Please log in.');

```
 }

 await axios.post(`${API_BASE_URL}/gpslocations/`, gpsData, {
 headers: {
 Authorization: `Bearer ${token}`,
 'Content-Type': 'application/json',
 },
 });

 // Clear GPS data from localStorage after successful submission
 localStorage.removeItem('gpsData');
 setStatus('GPS data sent successfully');
 } catch (error) {
 console.error('Failed to send GPS data:', error.message);
 setStatus(`Error sending GPS data: ${error.message}`);
 // Store data for retry if network issue
 localStorage.setItem('gpsData', JSON.stringify(gpsData));
 }
};
```


```


Back-End Receiving (in Django)

```
def perform_create(self, serializer):  
    # Save the GPSLocation  
    gps_location = serializer.save(user=self.request.user)  
  
    # Update or create GPSTest  
    GPSTest.objects.update_or_create(  
        user=self.request.user,  
        defaults={  
            'latitude': gps_location.latitude,  
            'longitude': gps_location.longitude,  
            'timestamp': gps_location.timestamp,  
            'altitude': gps_location.altitude,  
            'accuracy': gps_location.accuracy,  
        }  
    )
```


Web Hosting – DigitalOcean

```
jackieng@DigitalOcean-ubuntu-05:~  
olor  
~/mobile-trail main 3.12.4 24.4.0 ssh jackieng@209.97.164.73  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-78-generic x86_64)  
  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/pro  
  
System information as of Mon Aug 25 04:03:14 UTC 2025  
  
System load: 0.0 Processes: 112  
Usage of /: 31.3% of 23.17GB Users logged in: 0  
Memory usage: 35% IPv4 address for eth0: 209.97.164.73  
Swap usage: 0% IPv4 address for eth0: 10.15.0.5  
  
Expanded Security Maintenance for Applications is not enabled.  
  
2 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
1 additional security update can be applied with ESM Apps.  
Learn more about enabling ESM Apps service at https://ubuntu.com/esm  
  
Last login: Sat Aug 23 07:43:34 2025 from 58.176.57.226  
3.12.4
```

Search by resource name or public IP (Ctrl+B)

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Estimated costs: \$10.05

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Fedora

Debian

CentOS

AlmaLinux

Rocky Linux

Version
24.04 (LTS) x64

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\$6.00/month
\$0.009/hour

[CREATE VIA COMMAND LINE](#)

Create Droplet

Thank You