UrbanEase

PROJECT SUMMARY

The "UrbanEase" project, developed by Team Space Squad, is a smart dashboard and citizen-focused mobile application designed to transform urban planning and decision-making. It addresses the challenges of outdated maps, scattered data, and limited citizen engagement by integrating AI, space-based datasets, and community input into a single, streamlined platform. Citizens can share real-time insights on traffic, infrastructure, public spaces, and emergencies, while AI verifies and translates this feedback into actionable intelligence for urban authorities and planners. By combining advanced technology with participatory governance, "UrbanEase" empowers cities to make data-driven, inclusive, and sustainable planning decisions, fostering smarter, more resilient, and citizen-centered urban environments.

PROJECT DEMONSTRATION

YouTube Link of 30 sec video:
https://youtu.be/AikgFAu34RE

PROJECT

GitHub Link:
https://github.com/shakhawat2021hossain/urban-ease-by-space-squad
Figma link:
https://www.figma.com/design/9XMx5o3sHCqraZvsnxlIG7/Community-app?
Website Link:
https://urban-ease-by-space-squad.vercel.app/

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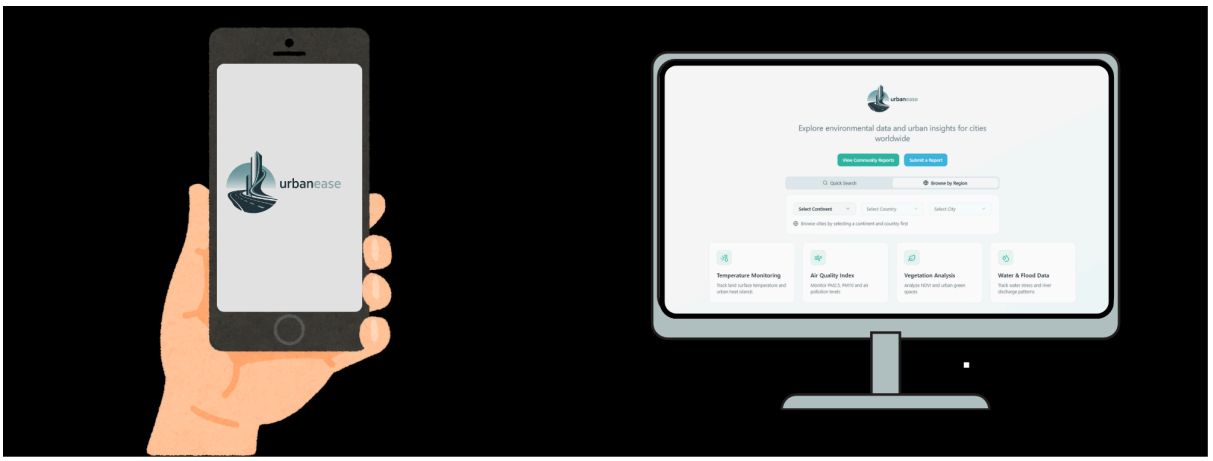
PROJECT DETAILS

The WHY, the WHAT, and the HOW

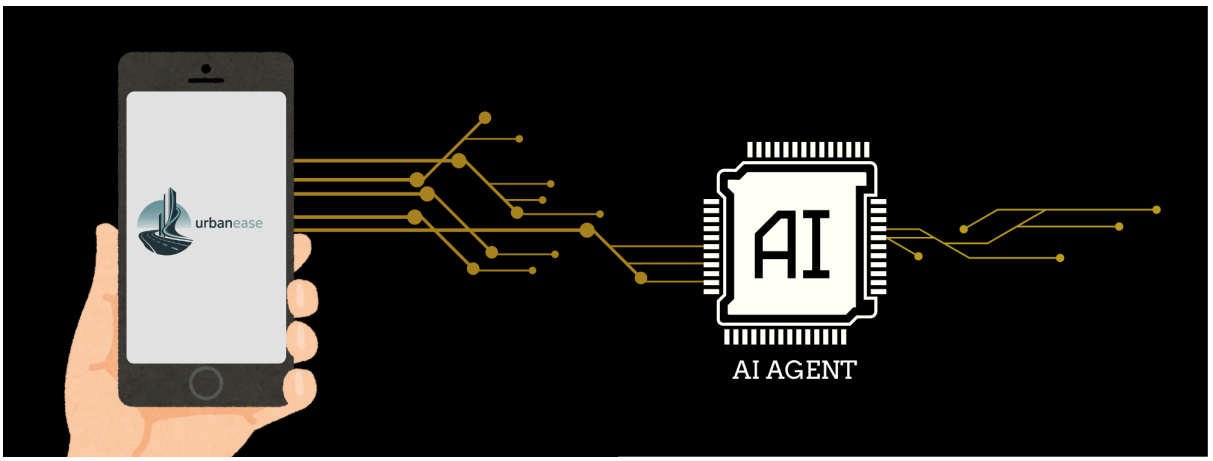
HOW WE ADDRESSED THE CHALLENGE

Our response to this challenge was the creation of UrbanEase, a smart urban planning platform integrating NASA Earth observation data, AI, and citizen engagement to address the complexities of climate change in cities. The system was designed to help planners monitor natural resources, ecosystems, and infrastructure, while ensuring both environmental sustainability and human wellbeing.

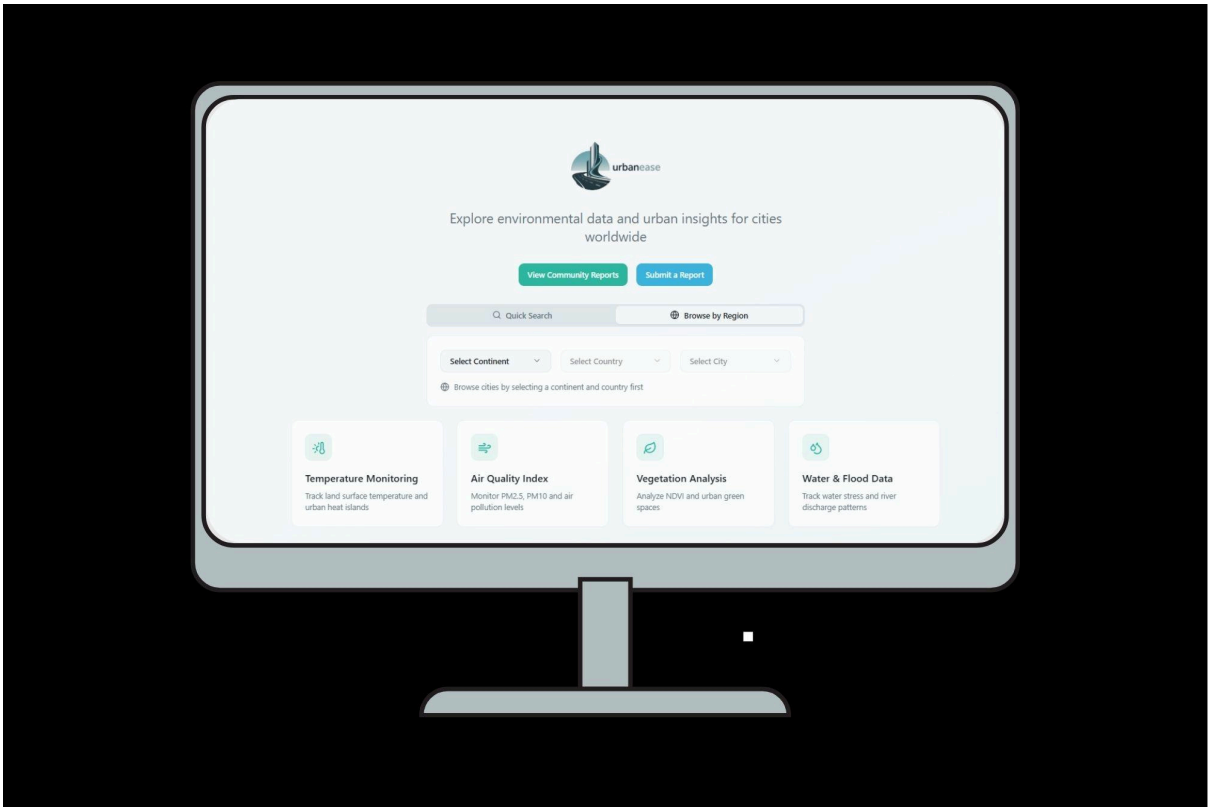


Through the citizen mobile app, individuals can share real-time observations on traffic, infrastructure, public spaces, and environmental issues. These inputs are then processed by an agentic AI engine, which verifies the data using Earth observation datasets and filters it into relevant categories such as air quality, land use, or water management.

UrbanEase



Finally, the web dashboard empowers urban planners with AI-sorted insights, geospatial visualizations, and integrated NASA data layers. This enables them to assess the environmental impacts of urban growth, anticipate risks from climate change, and design smart, resilient strategies for city development.



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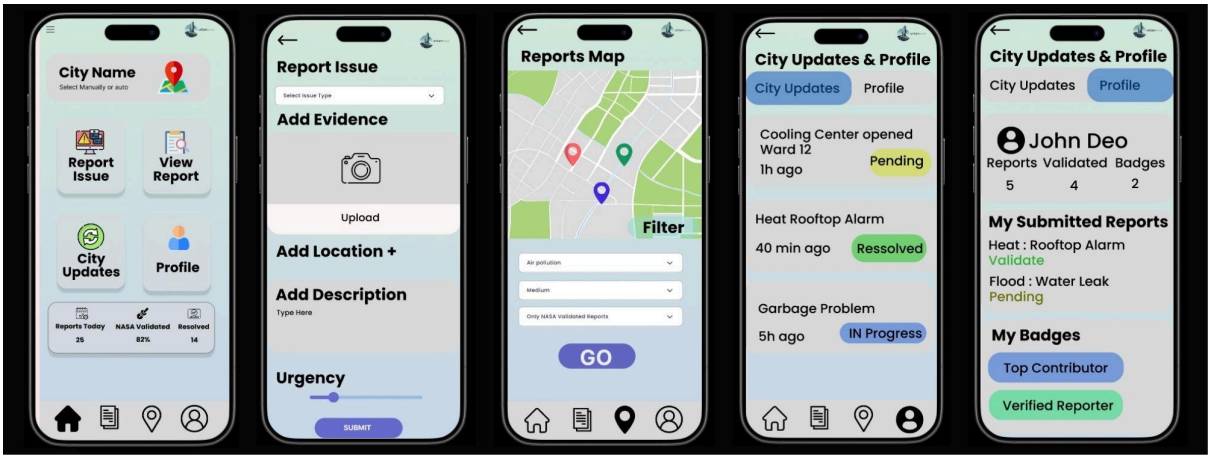
In essence, UrbanEase demonstrates how urban planning can evolve into a collaborative, data-driven process—where citizens, AI, and space-based observations converge to safeguard both society and the environment.

HOW WE DEVELOPED THIS PROJECT

Our project was driven by a clear mission: to modernize urban planning by bridging the gap between citizens, data, and decision-makers through technology.

Mobile App: We built the UrbanEase citizen mobile app to involve the public in urban planning directly. The app allows citizens to report issues, share feedback on infrastructure, and provide insights on traffic, emergencies, and public spaces. The interface was designed with material design principles, ensuring accessibility, simplicity, and ease of navigation. Prototyping was done in Figma, followed by development with cross-platform frameworks to ensure wide accessibility.



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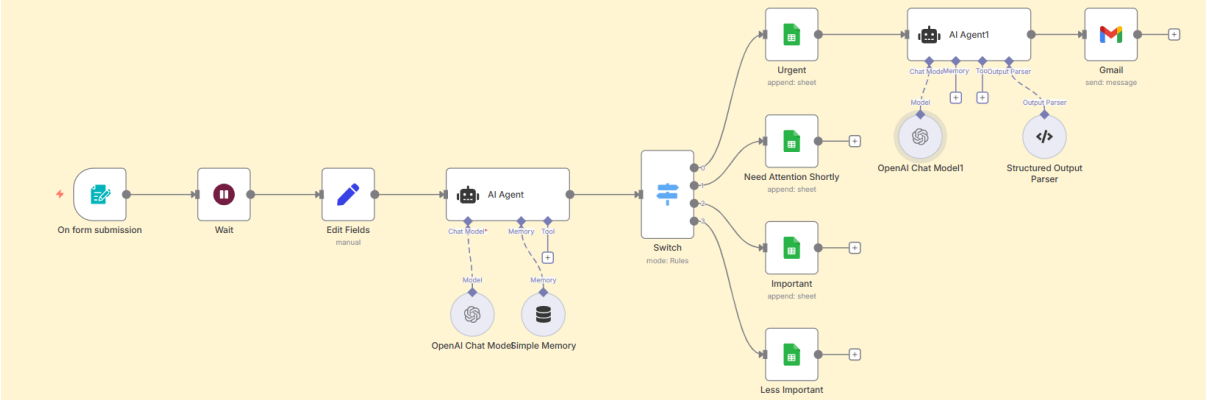
Agentic AI Sorting. At the core of UrbanEase is an agentic AI engine that verifies and sorts citizen inputs. This AI system cross-checks feedback with space-based datasets and other available data sources, filtering out noise and prioritizing critical information. The AI then translates the processed data into actionable categories for planners—such as Urgent, Need Attention Shortly, Important, or Less Important —ensuring that authorities receive reliable, high-impact insights.



Web Dashboard For urban authorities and planners, we developed the UrbanEase web dashboard. This centralized platform displays AI-verified citizen insights, real-time traffic and infrastructure data, and geospatial layers powered by NASA Earth Observation Data. The dashboard uses interactive visualizations, alerts, and decision-support tools to help planners identify issues, allocate resources, and design long-term strategies more effectively. Built with scalability in mind, it ensures smooth integration with existing urban management systems.

UrbanEase

Community Reports & City Selection

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City Data Display

UrbanEase

Through this structured development process, UrbanEase emerged as a practical, inclusive, and future-ready solution to make urban spaces smarter and more resilient.

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The COMMUNITY INVOLVEMENT

HOPE TO ACHIEVE

Our goal with **UrbanEase** is to make urban planning smarter, more inclusive, and environmentally sustainable. We aim to empower citizens to actively participate in shaping their cities, while equipping urban authorities with reliable, AI-verified insights enriched by NASA Earth observation data. By bridging the gap between communities, planners, and scientific data, we hope to contribute to more resilient cities that safeguard both human well-being and the environment. Ultimately, we aspire to inspire a new era of participatory, data-driven urban governance.

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IMPORTANT NOTE

A defining aspect of UrbanEase is its three-tiered structure—the citizen mobile app, agentic AI sorting system, and web dashboard. This ensures that citizen feedback is not only collected but also verified, categorized, and transformed into actionable intelligence for planners. The inclusion of NASA Earth observation data strengthens environmental awareness and ensures decisions are aligned with sustainability goals.

HIGHLIGHTED FEATURES

UrbanEase

- Citizen mobile app for reporting issues like air pollution, flooding, traffic congestion, and green space access
- Agentic AI engine to filter, verify, and categorize citizen inputs using NASA Earth observation data
- Integration of datasets on air quality, water quality, vegetation cover, and land use changes
- Interactive web dashboard for planners with real-time geospatial visualizations and decision-support tools
- Long-term sustainability monitoring to track urban growth impacts on ecosystems and natural resources
- Collaboration framework connecting citizens, planners, and city departments (transport, housing, health, parks)

BENEFITS

- Improves quality of life by ensuring better access to housing, transportation, green spaces, and healthcare
- Enhances climate resilience against flooding, drought, heatwaves, and other extreme events
- Protects the environment by monitoring pollution, land degradation, and ecosystem health
- Promotes inclusive governance by combining citizen input with verified scientific data
- Enables efficient resource allocation for healthcare facilities, housing, and green infrastructure
- Supports sustainable city growth by balancing economic development with environmental preservation

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The TOOLS and TECHNOLOGIES

TOOLS AND LANGUAGES USED

- Video Editing & Design: **Filmora**
- Prototyping & UI/UX Design: **Figma**
- App Development:
  - Language: **Dart**
  - Framework: **Flutter**
- Web Dashboard Development:
  - Languages: **HTML, CSS, JavaScript**
  - Framework: **React.js**
  - Styling: **Tailwind CSS**
  - UI Components: **shadcn/ui**
  - Animations: **Framer Motion**
  - Charts & Data Visualization: **Recharts**
  - Mapping: **Leaflet.js**
- AI & Data Processing: **Python (TensorFlow, Pandas)**
- Data Integration: **NASA Earth Observation APIs and Geospatial Data Tools**

GitHub Link to Our Project:
https://github.com/shakhawat2021hossain/urban-ease-by-space-squad

240 Seconds Video: **https://youtu.be/dN12CtGMACA**

USE OF ARTIFICIAL INTELLIGENCE (AI)

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For UrbanEase, we leveraged a combination of AI tools and software to enhance both development and project functionality:

- ChatGPT, Claude, Grok, and Loveable AI: Assisted in system design, workflow planning, content generation, and user experience strategies.
- Figma: Used for prototyping, UI/UX design, and interactive mockups of the mobile app and web dashboard.
- n8n: Automated data workflows and integration between citizen inputs, AI processing, and dashboard outputs.
- Canva: Created visually appealing graphics, presentations, and branding materials.

These AI and design tools collectively improved project efficiency, visualization, automation, and content quality, while powering the core intelligence and interactivity of UrbanEase.

Creativity & Considerations

- Inclusive Design: Accessible for mobile and low-bandwidth users.

UrbanEase

- Custom AI Model: Trained to classify urban discomfort indices.
- Accessibility & Multilingual: Prioritized universal access with multilingual readiness.

NASA DATA

- **NASA Earthdata Worldview**
- **NASA Earth Observatory**
- **NASA Socioeconomic Data and Applications Center (SEDAC)**
- **NASA Global Precipitation Measurement (GPM)**
- **NASA Soil Moisture Active Passive (SMAP)**
- **NASA Surface Water and Ocean Topography (SWOT)**
- **NASA Ocean Physics**
- **NASA Global Temperature Data**

SPACE AGENCY PARTNER & OTHER DATA

- **Stock Footage**
- **Canadian Space Agency (CSA) RADARSAT Constellation Mission (RCM)**
- **Brazilian Space Agency (AEB) National Spatial Data Infrastructure (INDE)**
- **Brazilian Space Research Institute (INPE) Catalogue**