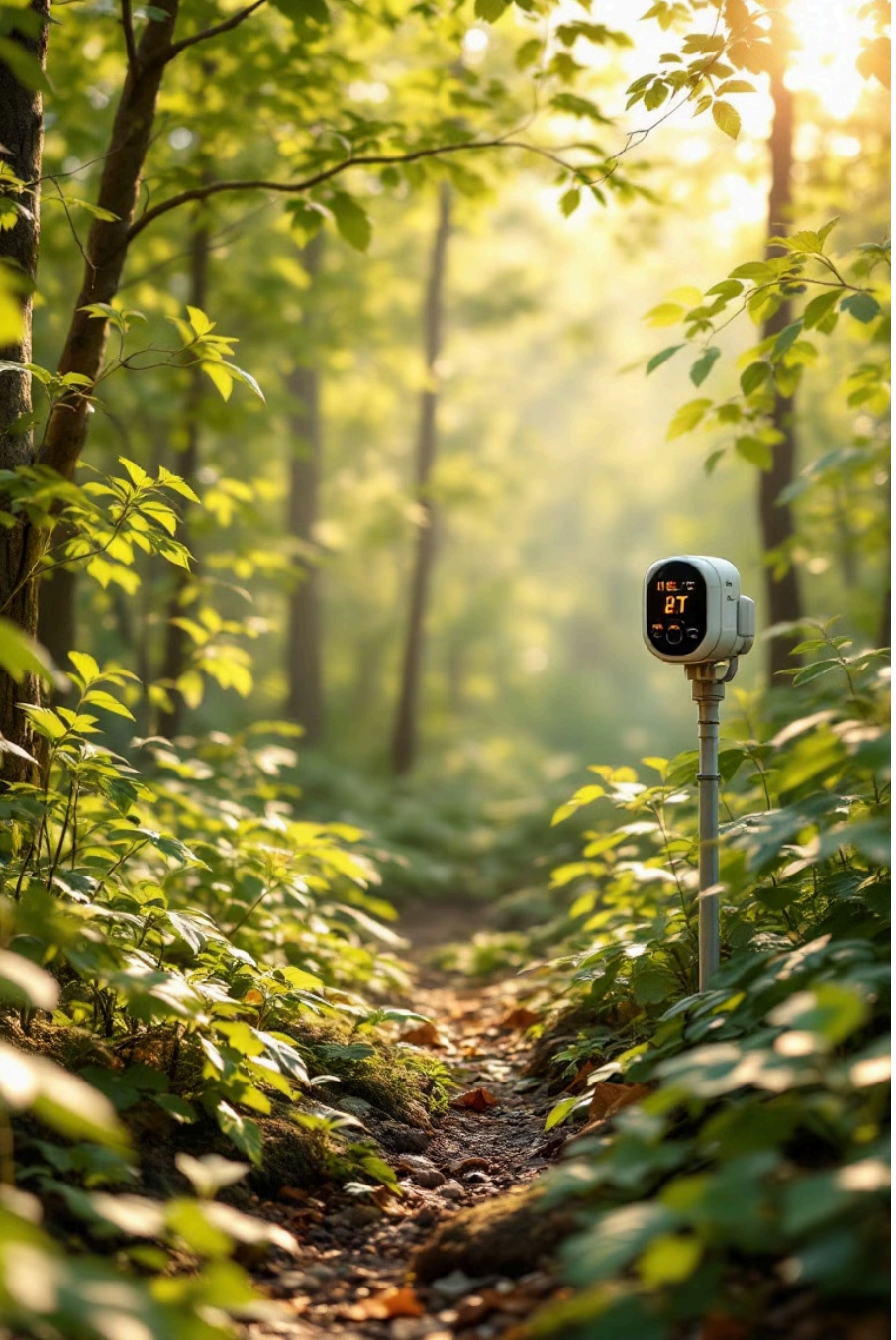


Sensing the Forest with IoT: UX Case Study

Project showcasing UX design skills in a complex IoT forest monitoring system for data collection and visualization.

Priyanshi Singh | UX Designer

Project Overview

Project Goal

Develop an IoT-based monitoring system.

Design cloud Dashboard.

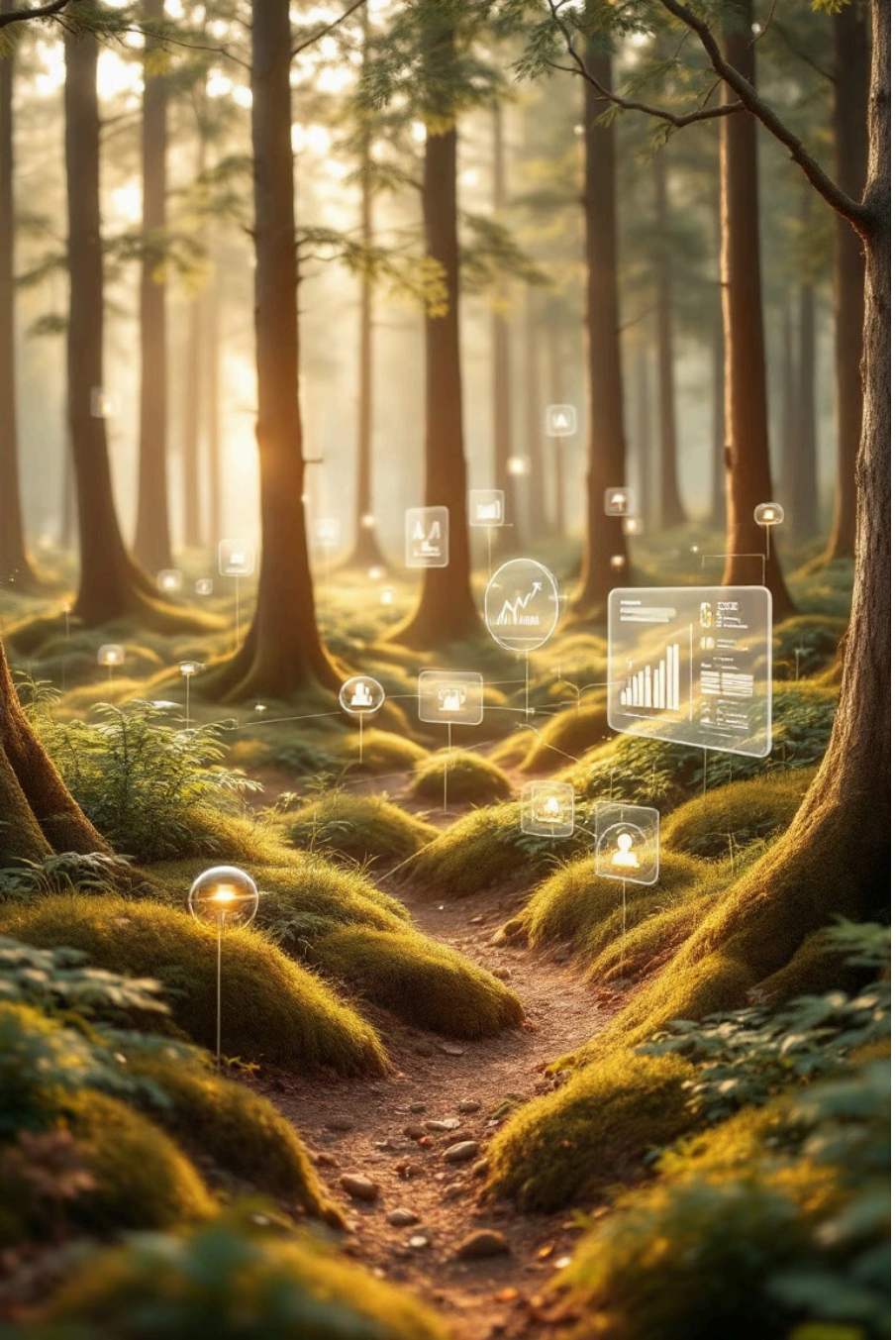
Key Parameters

Monitoring temp, humidity, soil moisture.

IOT + UX

User Focus

Real-time data for foresters and scientists



Pre-Research Motivation

Forest Management

Developing an intuitive UI to aid effective forest management strategies.

HCI + Tech

Connected platforms to collect & visulaize data for better decision-making.

Fostering Collaboration

Integrating UX, IoT, and forest management expertise to enhance user experience.

UX Design Process

1

Research

Analyzed forestry needs and existing IoT solutions

2

Ideation

Explored software visualization techniques & environmental data collection via IOT hardware.

3

Prototyping

Created Arduino Cloud dashboard wireframes

4

Testing

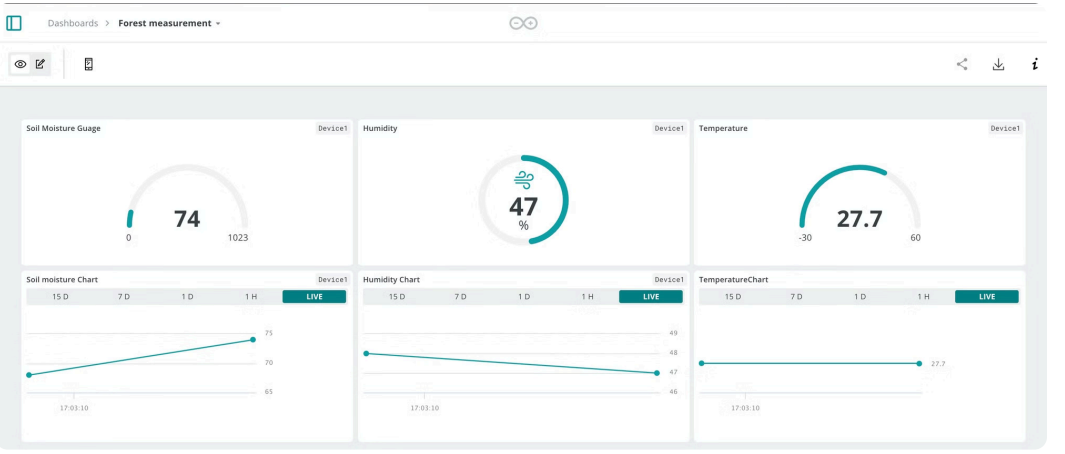
Validated with stakeholders and in field conditions

IoT System Architecture (H/W & S/W)

- ESP8266 WiFi microcontroller
- Soil moisture sensor
- DHT11 temp/humidity sensor

Software Systems

- Arduino Cloud platform
- Custom data visualization
- Real-time monitoring

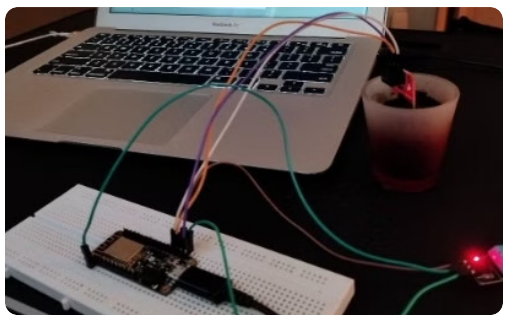


Create, Integrate, Visualize: The Dashboard Journey

Designing Arduino Cloud Dashboard

Created an intuitive dashboard [central hub] to visualize environmental data.

- User-Centered Approach
- Figma and FigJam
- Widgets & graphs
- Alerts & data logs
- Integration with h/w & s/w

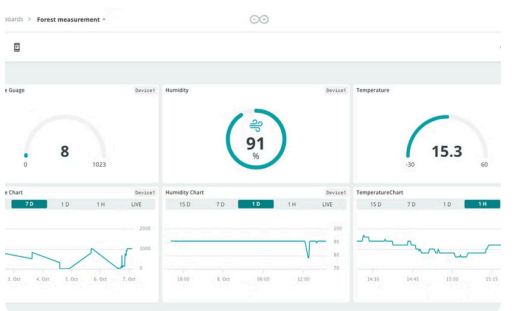


IOT Device & Dashboard Integration

- Integrated IOT sensor with the Arduino Cloud Dashboard.
- Programmed sensors to transmit temperature, humidity, and soil moisture data wirelessly.

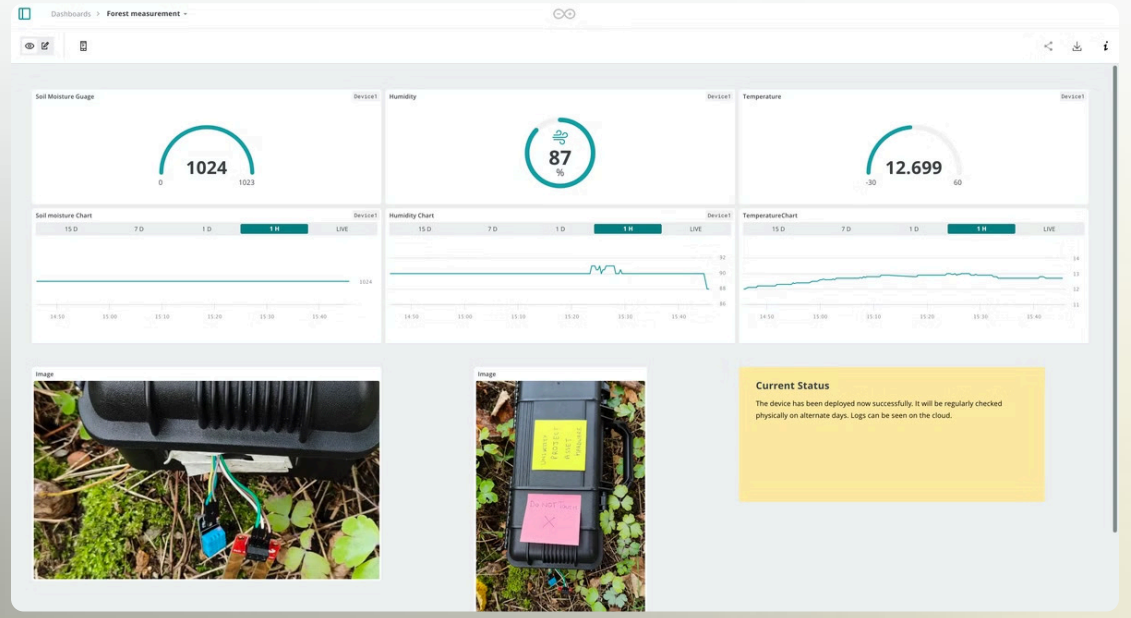
Device Deployment in the Forest

The device was carefully installed, ensuring that the sensors were positioned to accurately measure the desired parameters.



Data Visualization

The data was visualized on the Arduino Cloud **Dashboard**, providing insights into the environmental conditions of the forest.



Dashboard UX Design

Data Visualization

Line charts, widgets, percentages for intuitive reading

Historical View

Timeframes from 1 hour to 15 days

Alert System

Visual indicators for critical changes

Responsive Design

Accessible on multiple devices (cross-platform)

Result Demo

8.9°C

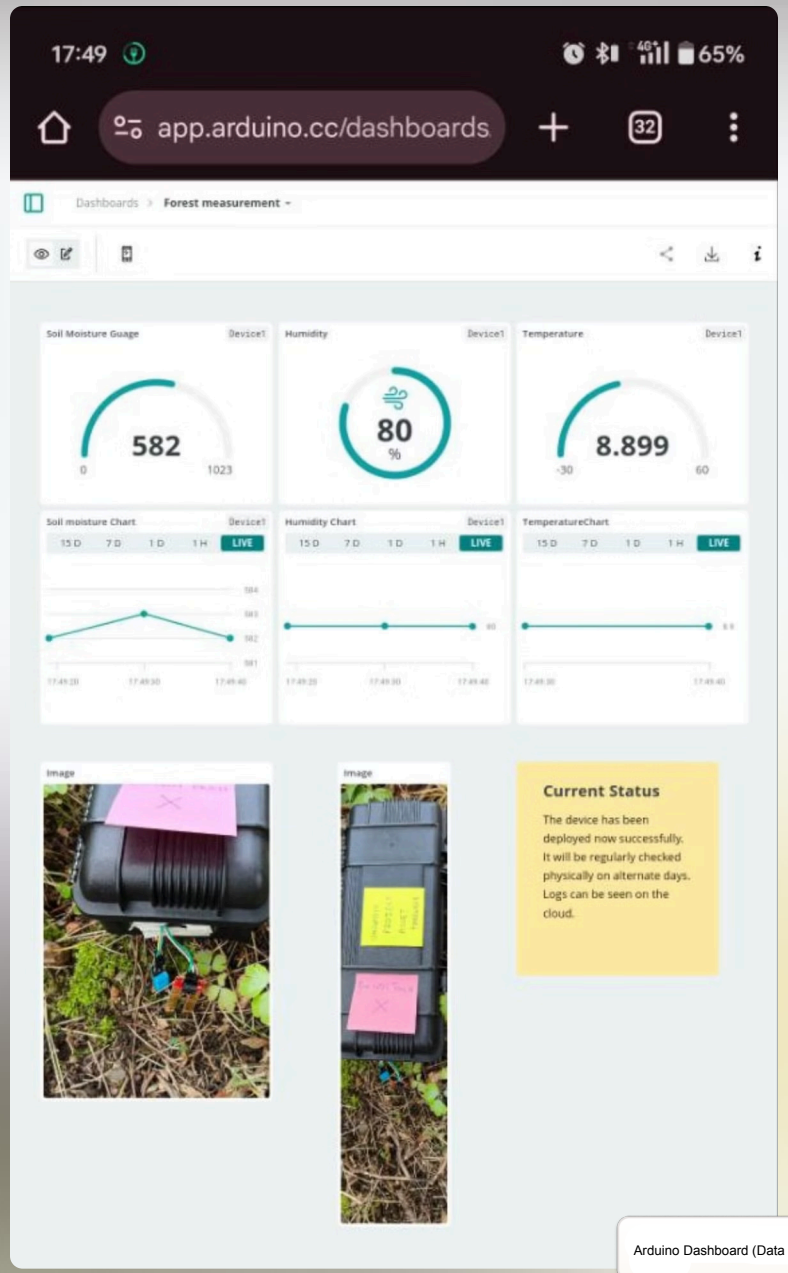
Avg Temperature

80%

Avg Humidity

582

Avg Soil Moisture



Arduino Dashboard (Data Collected from IOT sensors)

UX Challenges & Solutions

Large data representation on dashboard

Designed simple UI with clear data and real-time updates.

Compatibility with IoT sensors

Developed a scalable dashboard adaptable to different sensor inputs.

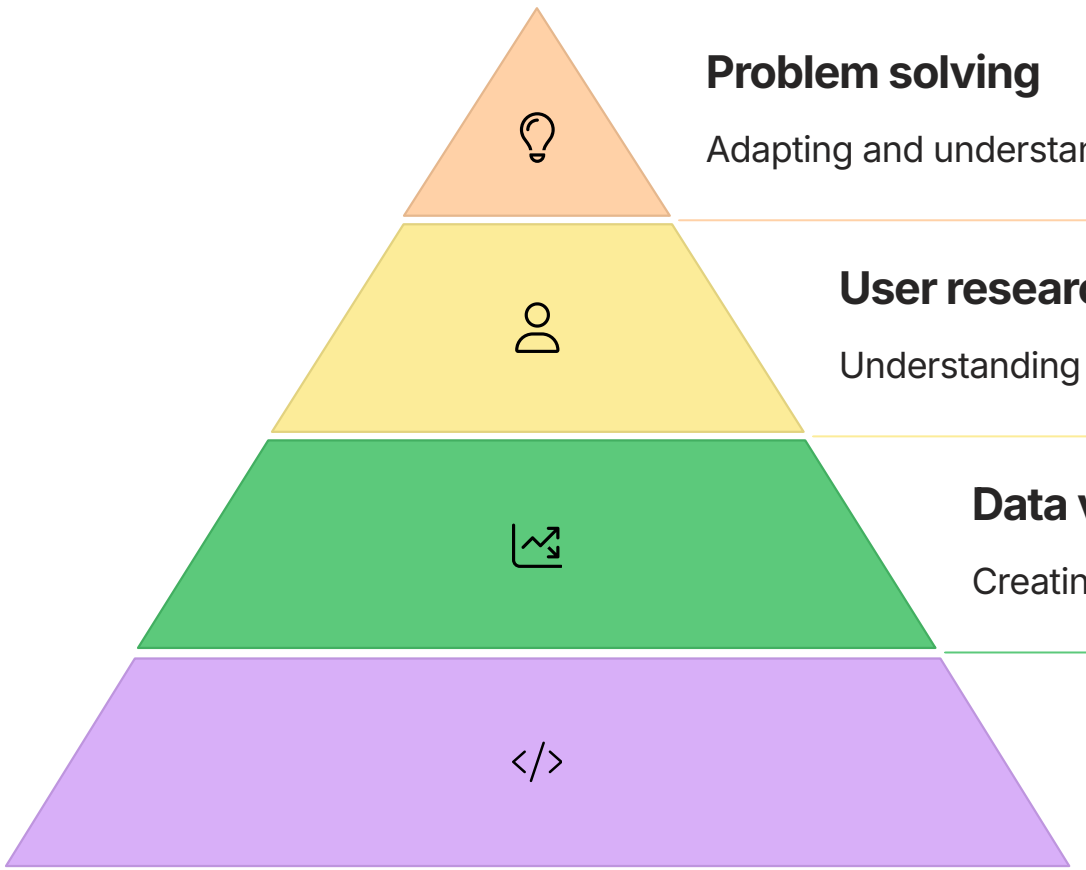
Interface Complexity

Simplified visualization for non-technical users

Limited connectivity in forest areas.

Kept on changing the Device location

Skills Demonstrated



Problem solving

Adapting and understanding Integration of connected devices & platforms

User research

Understanding forestry stakeholder needs

Data visualization

Creating intuitive dashboard *compatible with other devices

Technical integration

Bridging hardware and software systems

Thank You & Future Directions

Impact & Learnings

This forestry IoT project demonstrates how **connected technology** can enhance environmental monitoring in remote areas.

The dashboard solution bridges the gap between complex sensor data and actionable insights for forestry experts.

- Project expanded technical integration skills across platforms
- Designing for challenging environments improved adaptability
- Solution provides foundation for broader conservation applications

Device Deployment