HackVisionVault

Track Title: BRIDGING AI AND IOT FOR A NEW ERA IN ROBOTICS

Theme: AI Innovation

PS Category: Software

Team Name: Vizcureot

Team Members:

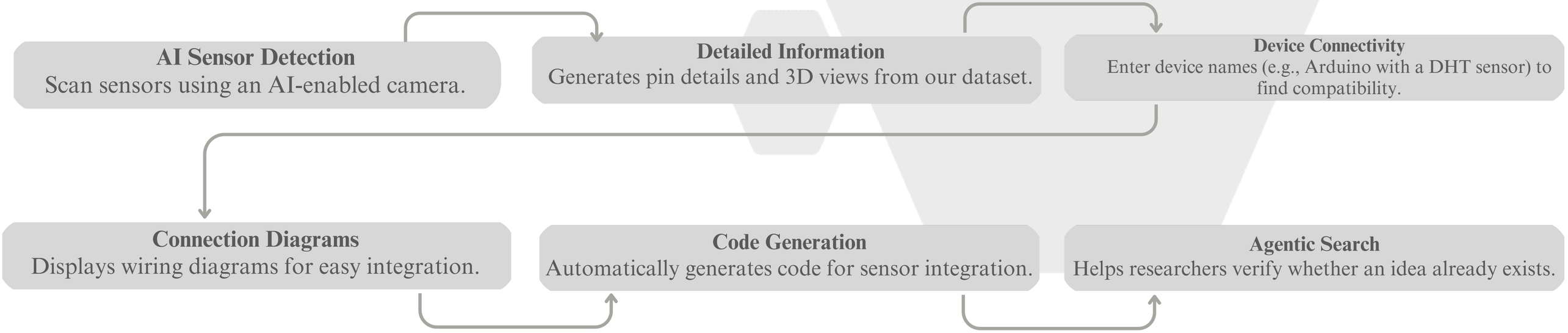
- Kashish
- Rohit

IDEA TITLE

Problem

We live in the era of AI, robotics, IoT, and sensors, but software engineers and web developers often struggle to enter this field due to complex wiring, heavy coding, and other challenges. Electronics students also face difficulties with the vast number of sensors available. Additionally, there is a lack of resources on YouTube and online platforms to simplify learning. This is where Vizcureot comes in, bridging the gap and making IoT development more accessible.

Solution



TECHNICAL APPROACH

Programming Language

- Python
- JavaScript
- Html
- CSS

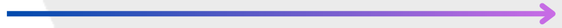
Framework

- Django
- Crewai
- Langchain(RAG)
- YOLO(For Sensors detection)

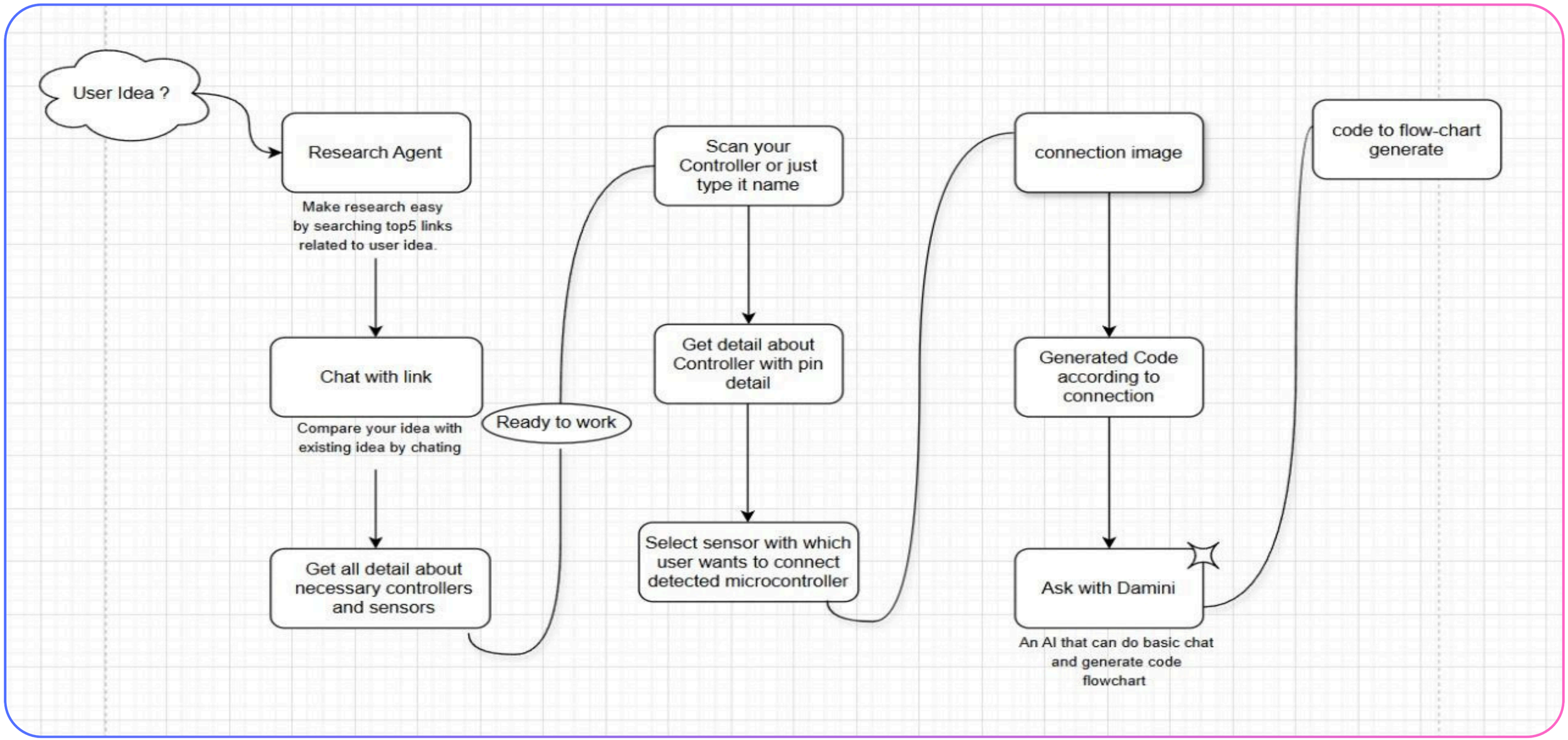
Database

- Firebase(RTDB)
- MongoDB(Vector Store)

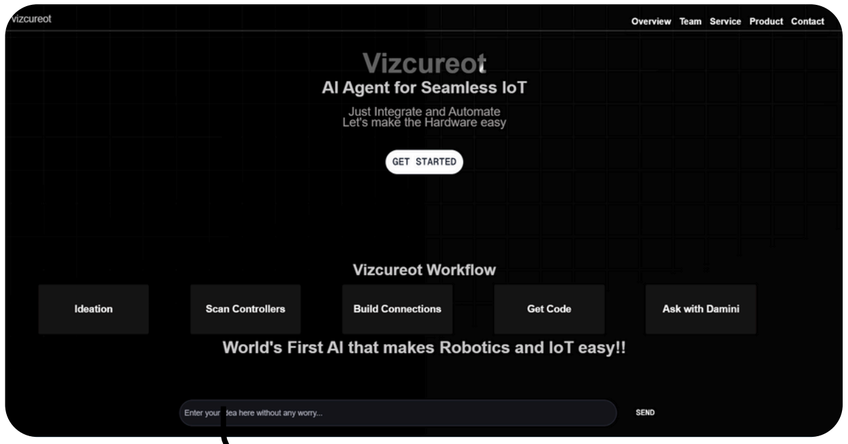
Workflow

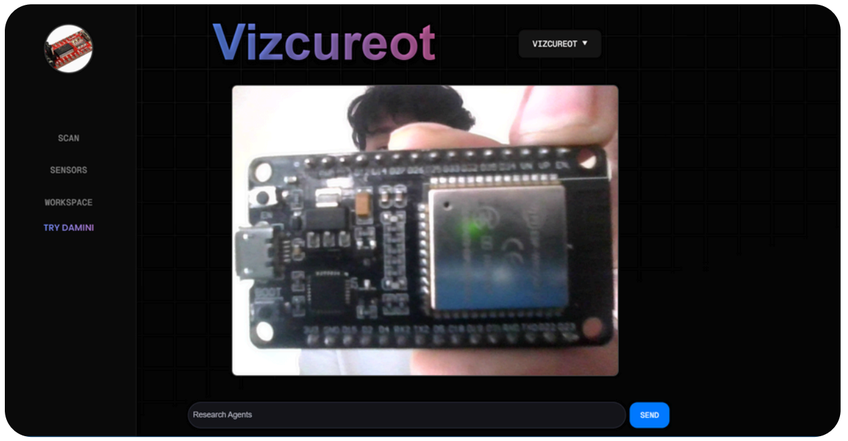


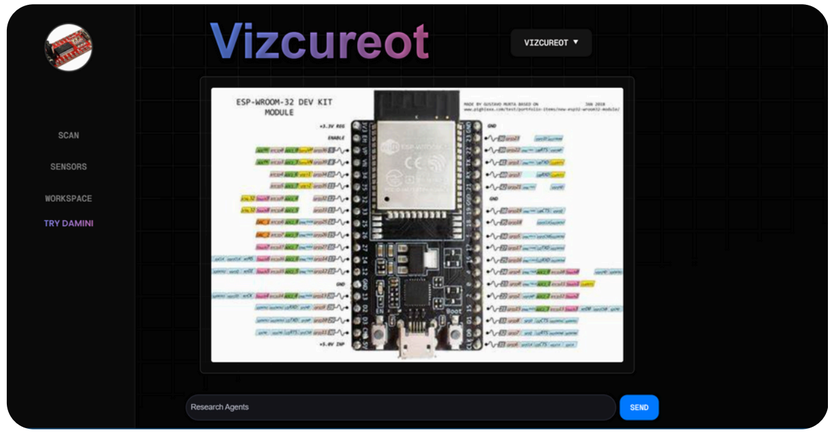
Workflow

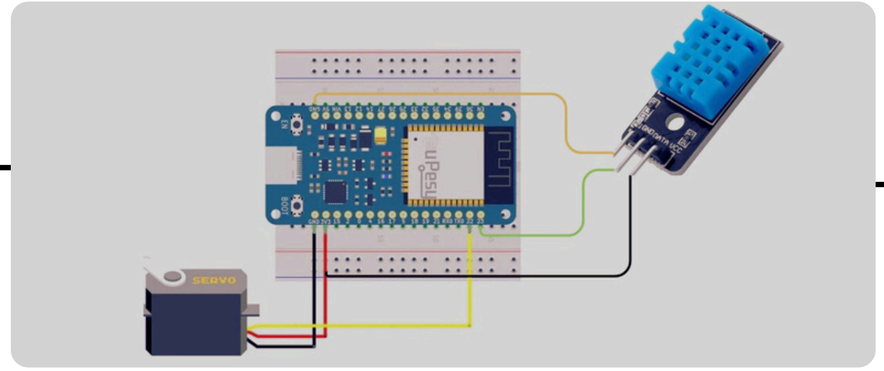


Demo:- https://youtu.be/N0AOiC7RIG8?si=O5kWu8LpeniEbtProject workflowZh

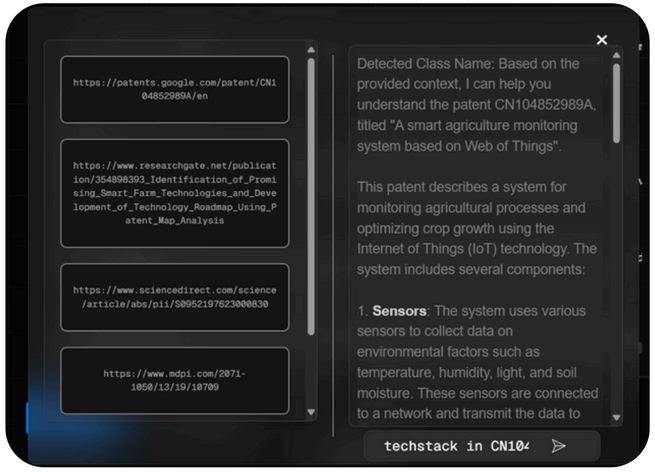









```
// Define the servo pin
const int servoPin = 14; // Replace with your chosen pin (PWM capable)

// Create a servo object
Servo myservo;

void setup() {
  Serial.begin(115200);

  // Attach the servo to the pin
  myservo.attach(servoPin);

  Serial.println("Servo initialized");
}

void loop() {
  // Sweep the servo from 0 to 180 degrees
```



FEASIBILITY AND VIABILITY

Feasibility

Currently, no dedicated model focuses on IoT, despite its high demand. Sensors, wiring, and C-embedded programming are complex, making IoT adoption difficult.
VizcureOT simplifies this for students, researchers, and R&D teams, just like ChatGPT did for software engineers.

Why It Works?

- Bridges the gap between software and IoT.
- Reduces complexity with AI-powered automation.
- Faster prototyping with auto-generated code & diagrams.
- Scalable & adaptable across industries.

Major Challenge

The biggest challenge we observe right now is the lack of IoT data on the internet. However, this can be our unique selling point—by building a comprehensive IoT dataset using **Data Augmentation** Technique, we can become the go-to platform for IoT solutions.

IMPACTS AND BENEFITS

Potential Impact on Target Audience

VizcureOT will revolutionize IoT adoption across:

- College Students – Simplifies learning IoT without deep hardware knowledge.
- STEM & Atal Labs – Enhances hands-on experimentation with AI-driven assistance.
- R&D Departments – Accelerates innovation with faster prototyping and automated solutions.
- IoT-Based Companies – Reduces development time and hardware failures, improving efficiency.

Benefits of the Solution

- Social Impact – Enable engineers to enter IoT by removing cost and complexity barriers.
- Economic Impact – Cuts cost by preventing sensor/controller damage from wiring mistakes.
- Environmental Impact – Reduces e-waste by minimizing hardware failures.
- R&D Acceleration – Agentic Search speeds up idea validation and innovation.

Plans / Market Potential

Pro Plan:

- Multi-sensor detection (up to 5 sensors)
- Advanced pin details with extended 3D sensor views
- Comprehensive AI-generated connection diagrams
- Expanded device compatibility (Arduino, Raspberry Pi, ESP32, etc.)
- Real-time connectivity suggestions and solutions
- Full access to online web compiler for direct code testing

Enterprise Plan:

- Unlimited sensor detection and connection
- Custom 3D visualizations and AI-based pin mapping
- Collaboration features for team-based IoT projects
- Cloud-based storage for past projects and codes
- AI-driven troubleshooting for real-time connectivity issues
- Advanced integrations for IoT platforms and industrial sensors
- Premium support and real-tie consulting for large projects

The global Internet of Things (IoT) market size was valued at USD 595.73 billion in 2023. The market is projected to grow from USD 714.48 billion in 2024 to USD 4,062.34 billion by 2032, exhibiting a CAGR of 24.3% during the forecast period.

Source: https://www.fortunebusinessinsights.com/industry-reports/internet-of-things-iot-market-100307