



Parshvanath Charitable Trust's  
**A. P. SHAH INSTITUTE OF TECHNOLOGY**  
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(Religious Jain Minority)

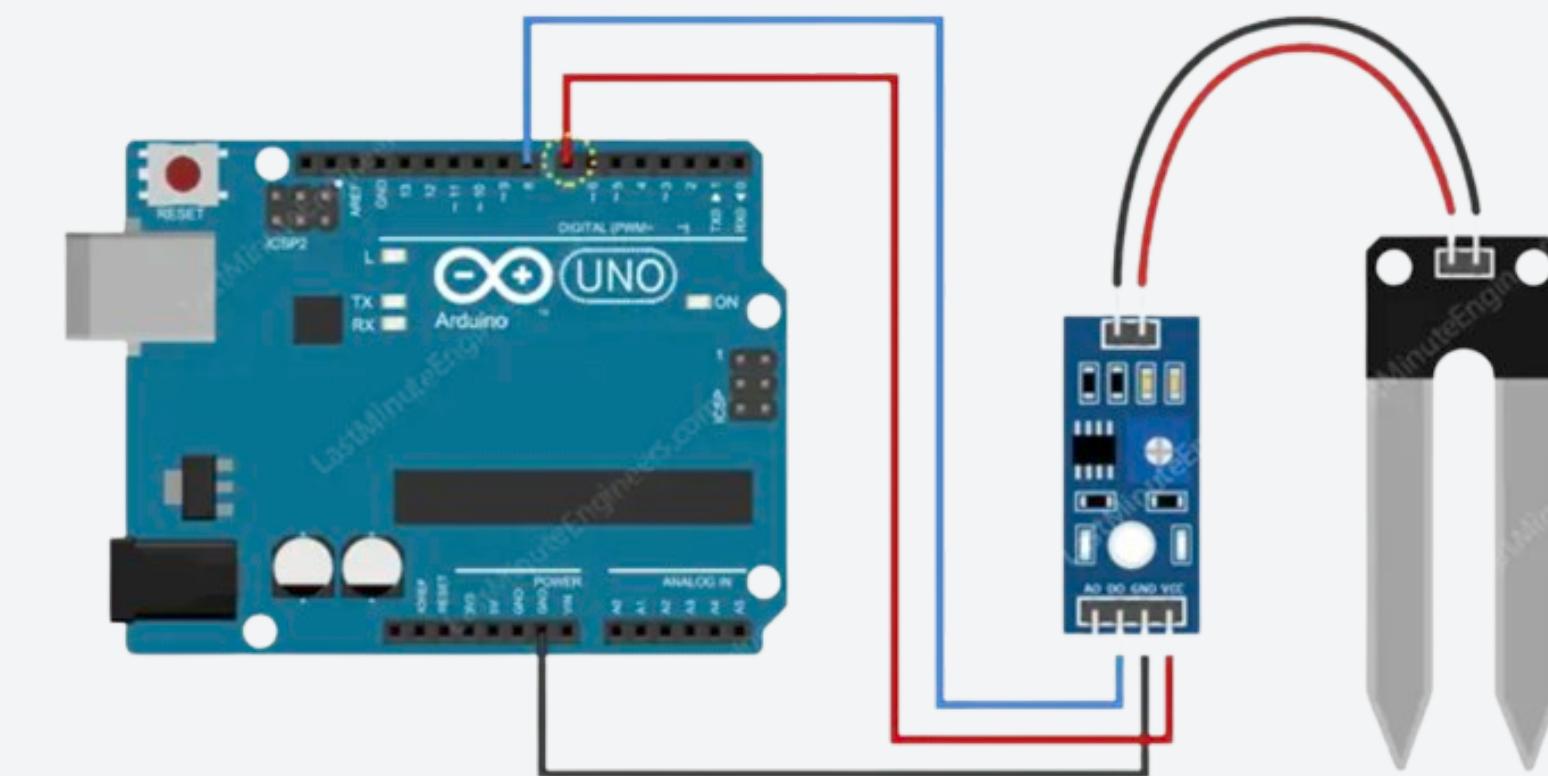
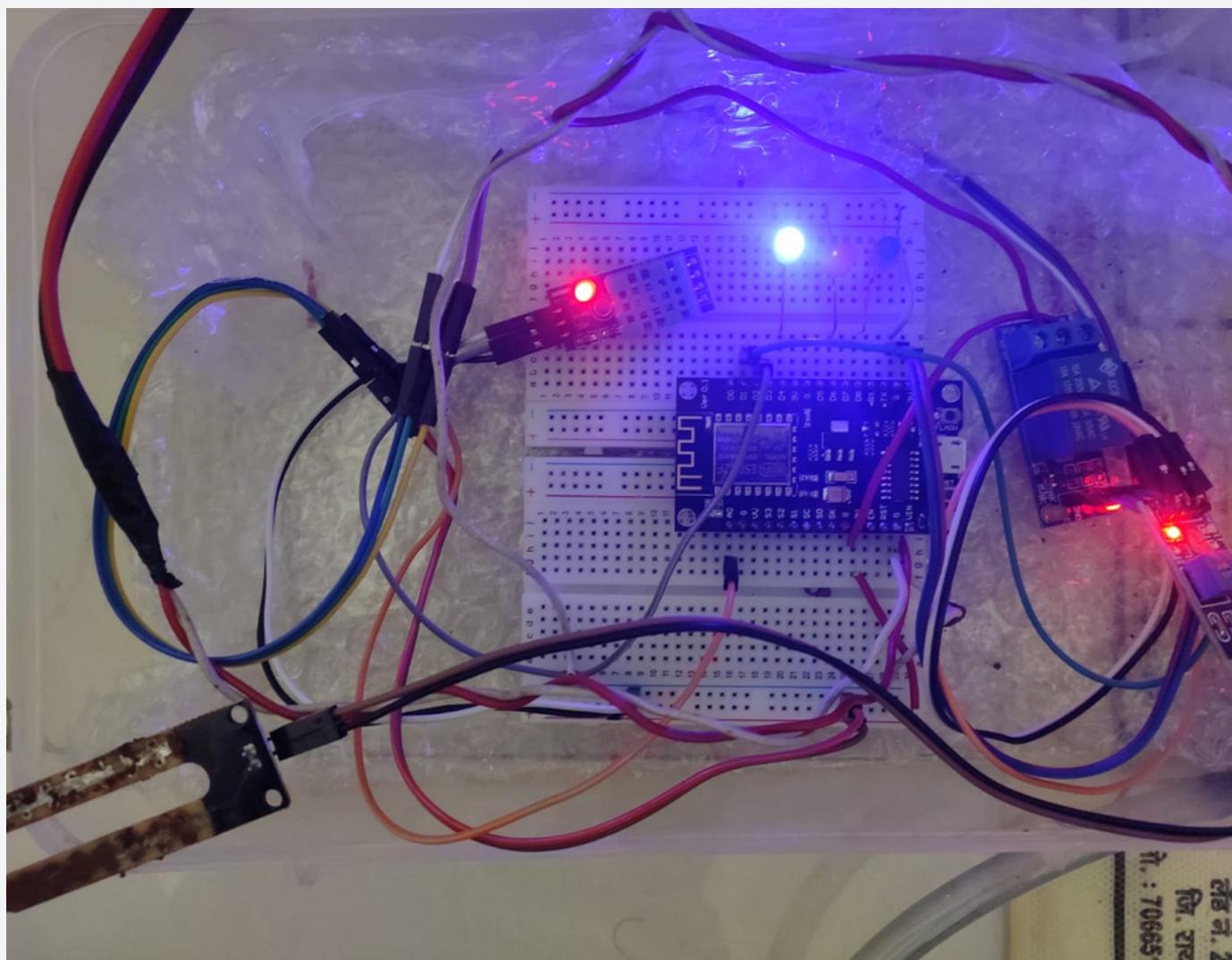
# TOPIC PRESENTATION

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**Prathamesh Naik    21102027**

**Harsh Maurya       21102184**

# BLOOM BUDDY





Analysis

September 4, 2023

# The vertical farming boom is over (for now). What went wrong?

Sifted has found at least 15 vertical farming companies headquartered in Europe that have gone bankrupt

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Selin Bucak

6 min read

# PROBLEM STATEMENT

- **POPULATION GROWTH AND FOOD DEMAND:** THE INCREASING POPULATION OF INDIA IS ESCALATING THE DEMAND FOR FOOD PRODUCTION AT AN UNPRECEDENTED RATE.
- **LAND SCARCITY:** THE AVAILABILITY OF ARABLE LAND IS DWINDLING DUE TO URBANIZATION AND ENVIRONMENTAL DEGRADATION, POSING A CHALLENGE TO MEET THE GROWING FOOD DEMAND.
- **WATER SHORTAGES:** WATER SCARCITY, MADE WORSE BY CLIMATE CHANGE AND INEFFICIENT IRRIGATION PRACTICES, IS A SIGNIFICANT CHALLENGE TO SUSTAINABLE AGRICULTURE.
- **NEED FOR INNOVATION:** TRADITIONAL FARMING PRACTICES ARE INADEQUATE IN ADDRESSING THESE CHALLENGES, NECESSITATING INNOVATIVE SOLUTIONS FOR INCREASING AGRICULTURAL PRODUCTIVITY AND OPTIMIZING WATER USAGE.

# OBJECTIVES

- 1. INCREASE PRODUCTIVITY:** LEVERAGE DATA INSIGHTS TO ENHANCE FARMING AND BOOST CROP YIELD.
- 2. REDUCE COSTS:** IMPLEMENT AUTOMATION IN FARMING TO CUT LABOR COSTS AND MINIMIZE RESOURCE WASTE.
- 3. SUSTAINABILITY:** ENCOURAGE SUSTAINABLE FARMING BY OPTIMIZING WATER, FERTILIZER, AND PESTICIDE USE.
- 4. EASE OF USE:** SIMPLIFY ACCESS AND USAGE OF ADVANCED FARMING TECHNOLOGY FOR FARMERS.

# SCOPE

- 1. DATA COLLECTION:** UTILIZE SENSORS AND IOT FOR AUTOMATION OF PLANT CARE.
- 2. DATA ANALYSIS:** USE DEVICES & MACHINE LEARNING TO ANALYZE DATA FOR INSIGHTS ON SOIL HEALTH AND WEATHER.
- 3. AUTOMATION:** CREATE AUTOMATED SYSTEMS FOR IRRIGATION AND TEMPERATURE CONTROL.
- 4. CROP AWARENESS:** BLOG SECTION ON THE WEBSITE WHERE USERS CAN FIND ALL RESOURCES NEEDED TO HELP UNDERSTAND HOW TO GROW FOOD AND PLANTS.

# TECHNICAL STACK

## FRONTEND

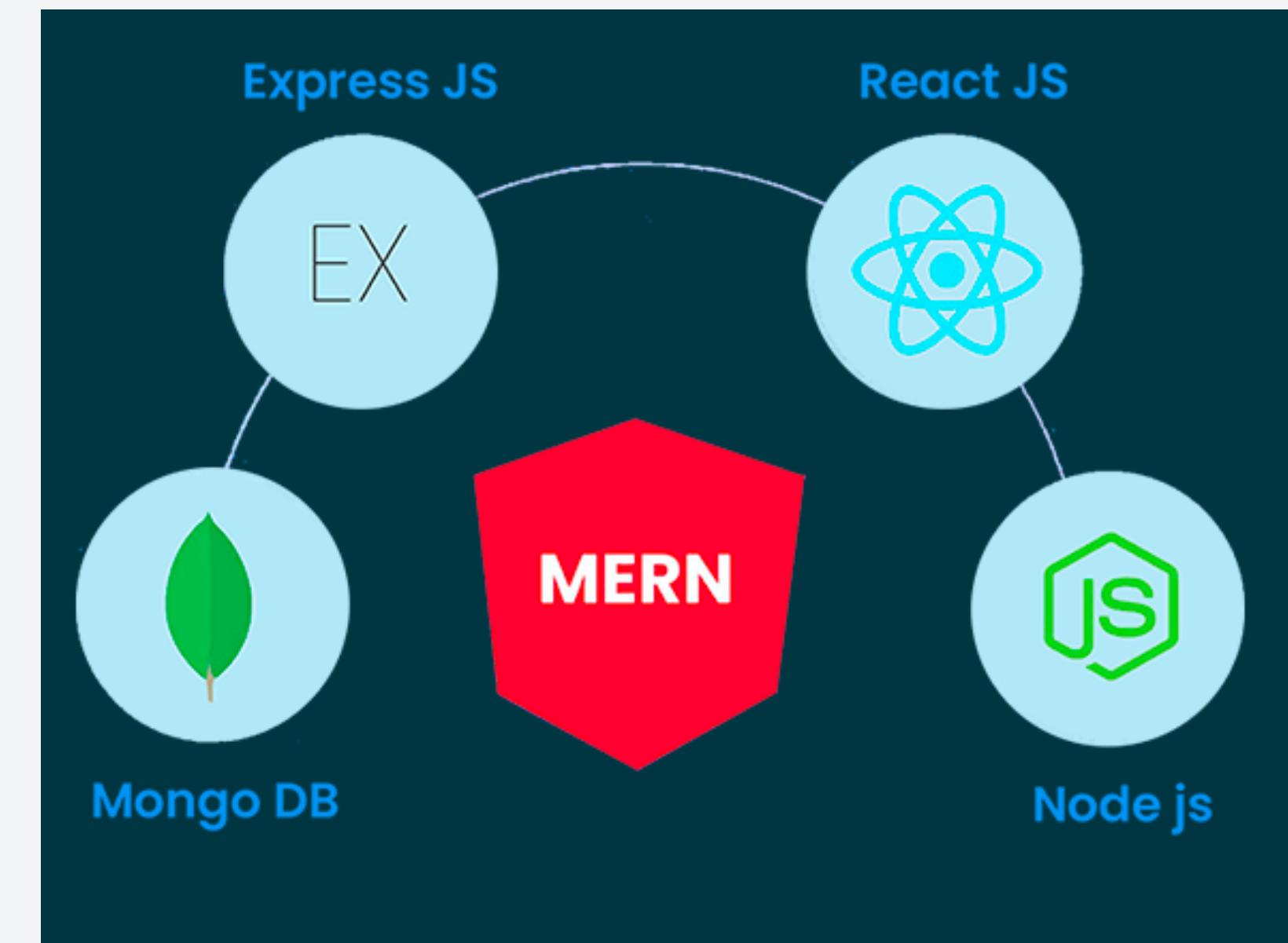
- USE REACT.JS TO BUILD A USER-FRIENDLY DASHBOARD. THIS DASHBOARD CAN DISPLAY DATA INSIGHTS, REMINDERS, SYSTEM STATUS, AND CONTROLS FOR THE AUTOMATED SYSTEMS.

## BACKEND

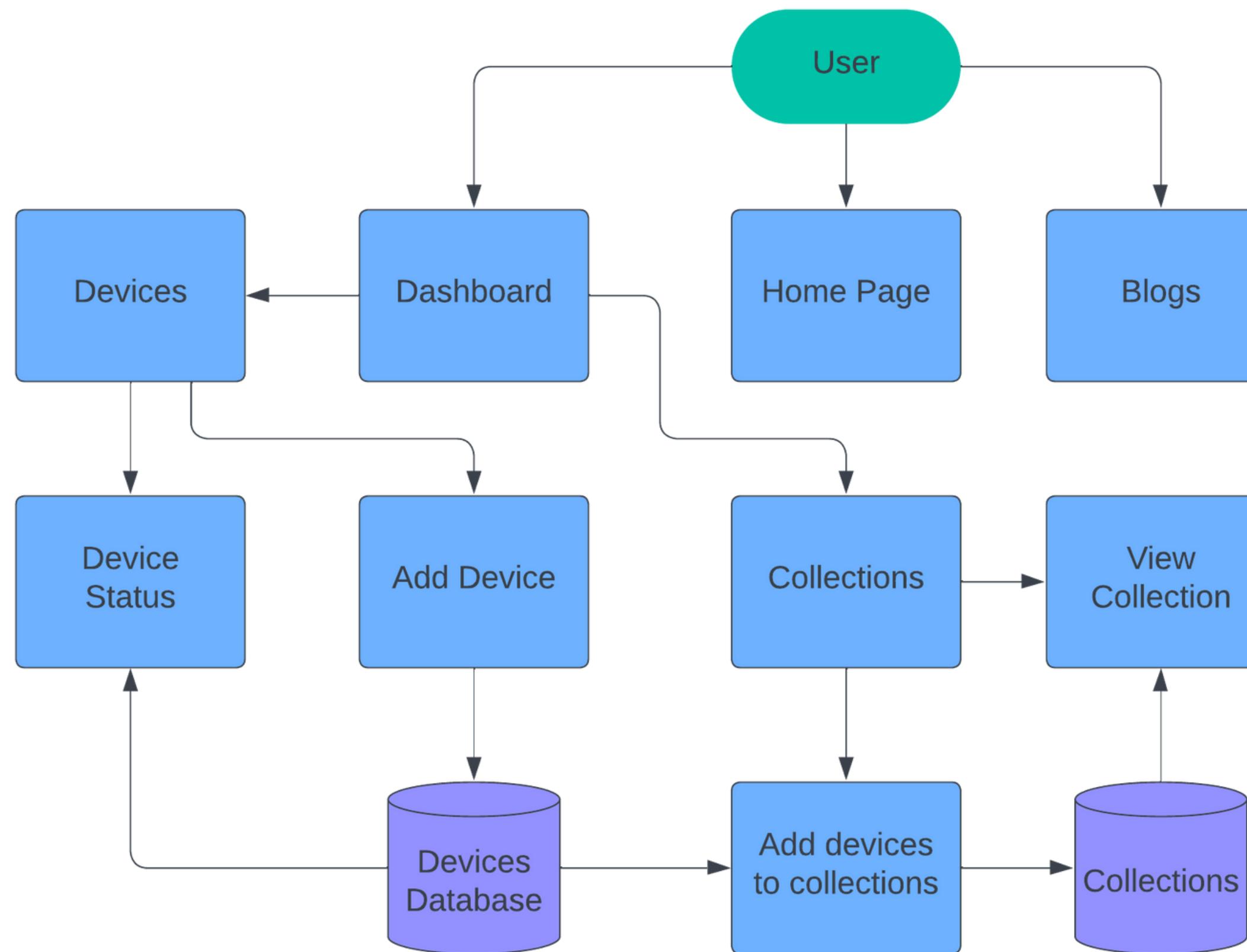
- USE EXPRESS.JS FRAMEWORK IN NODE.JS FOR SERVER-SIDE OPERATIONS. THIS INCLUDES HANDLING API REQUESTS, RUNNING DATA ANALYSIS SCRIPTS, AND CONTROLLING AUTOMATED SYSTEMS.

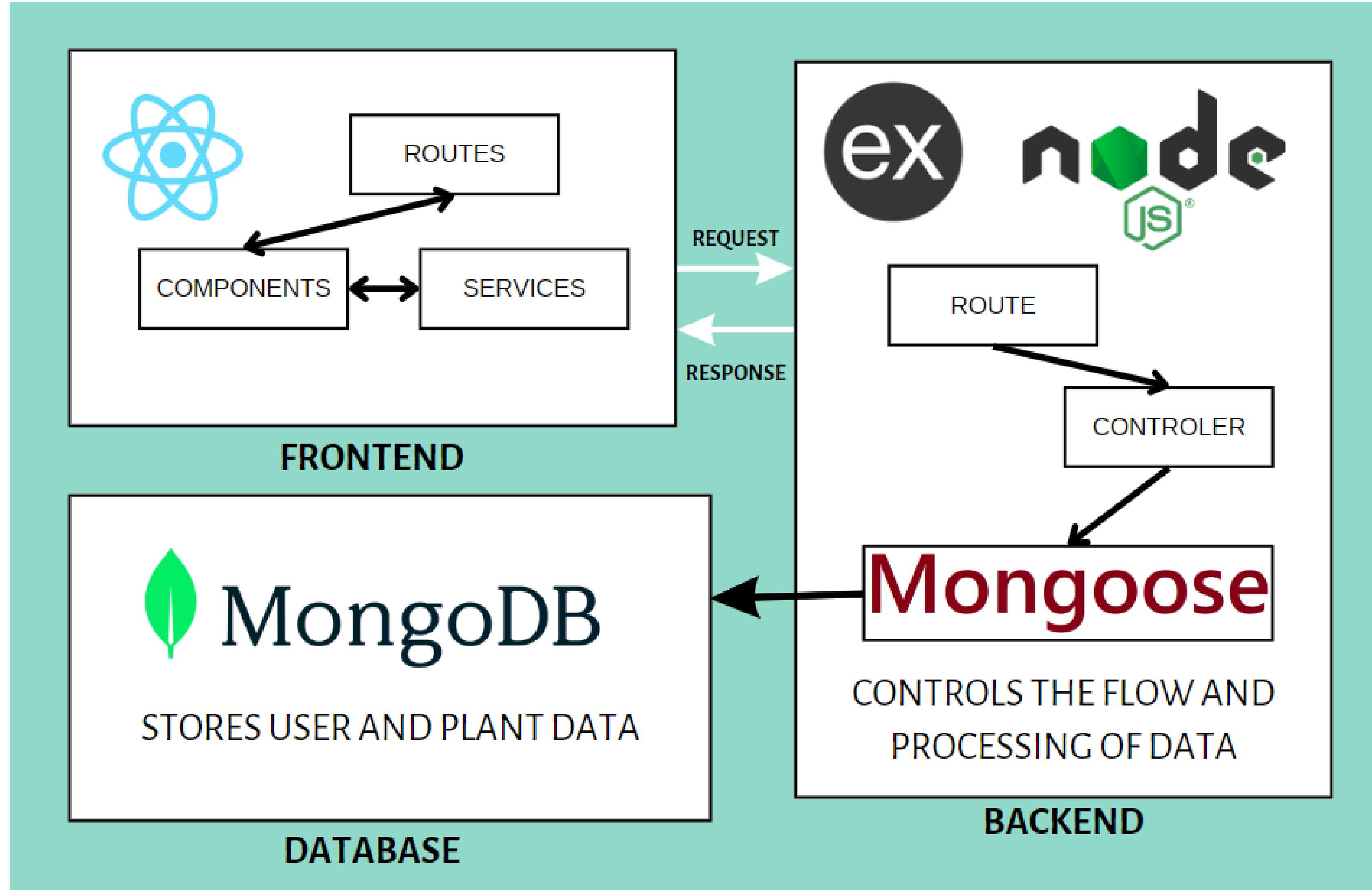
## DATABASE

- USE MONGODB TO STORE SENSOR DATA, PROCESSED DATA, AND SYSTEM STATUS.

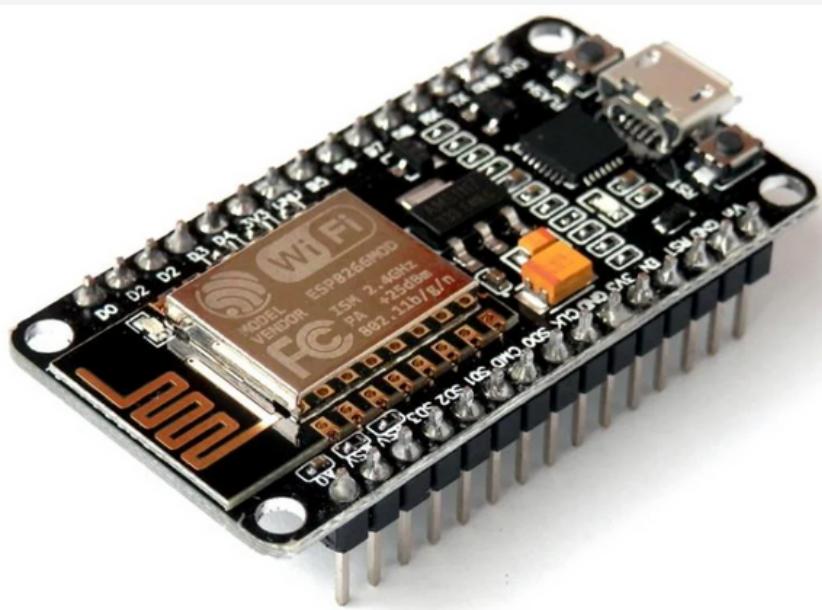


# PLANT CARE AUTOMATION

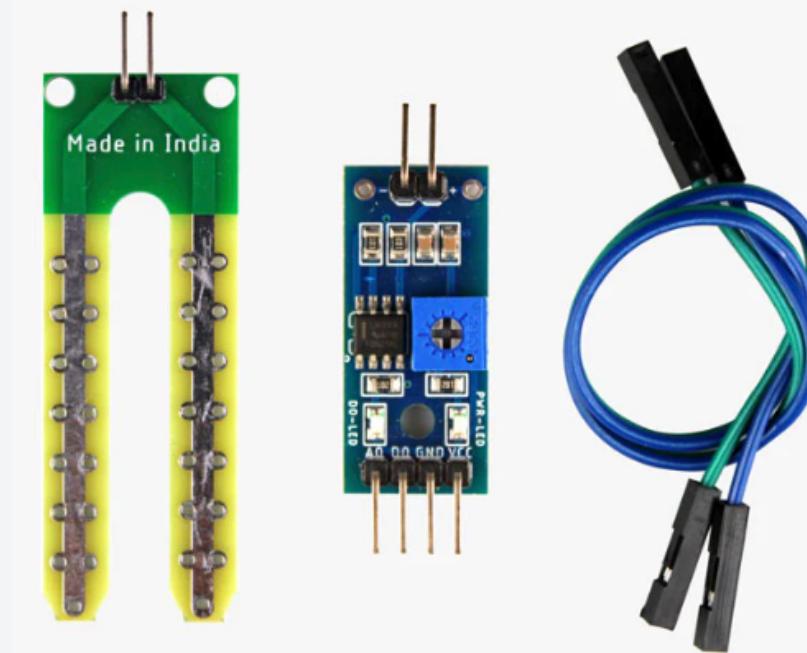




# IOT DEVICES



**NODEMCU ESP8266**



**SOIL MOISTURE SENSOR**



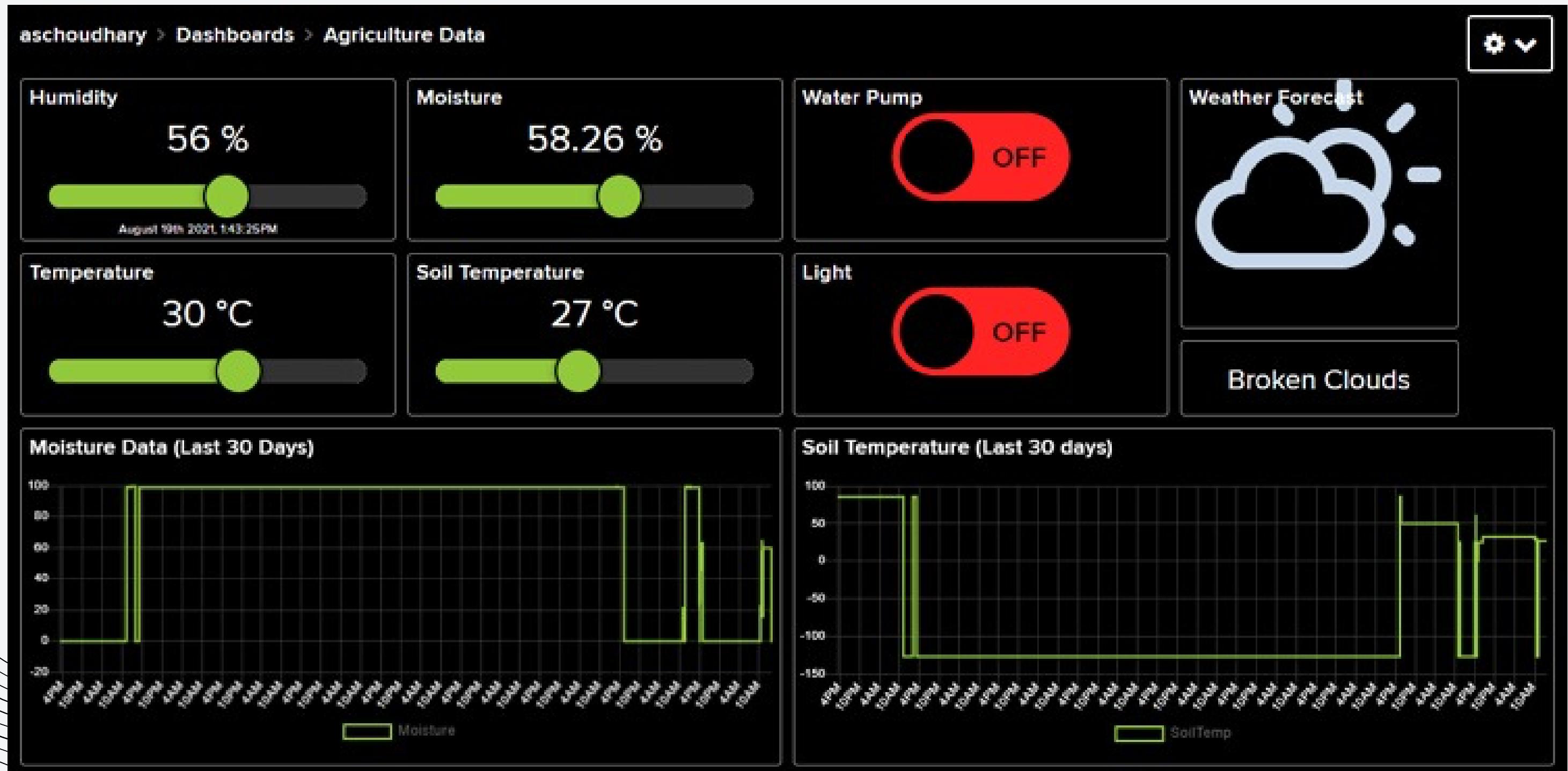
**DHT11 SENSOR**



**SUBMERSIBLE MINI  
WATER PUMP**



**LIGHT DEPENDENT  
RESISTOR**



# REFERENCES

**HTTPS://CIRCUITDIGEST.COM/MICROCONTROLLER-PROJECTS/SMART-IRRIGATION-SYSTEM-USING-ESP32-AND-BLYNK-APP**

**HTTPS://FARMWAVE.COM**

# E COMM. WEBSITE WITH NEGOTIATION ENGINE



# PROBLEM STATEMENT

- **E-COMMERCE DEMAND:** THE GROWING INTERNET PENETRATION AND DIGITAL LITERACY IN INDIA ARE ESCALATING THE DEMAND FOR ONLINE SHOPPING.
- **MARKET SATURATION:** THE E-COMMERCE MARKET IS CROWDED, POSING A CHALLENGE TO DIFFERENTIATE AND ATTRACT CUSTOMERS.
- **BULK BUYING AND PRICE NEGOTIATION:** WHEN CUSTOMERS BUY PRODUCTS IN BULK, THEY EXPECT A LOWER PRICE. THE PLATFORM SHOULD FACILITATE NEGOTIATION FOR BULK PURCHASES.
- **NEGOTIATION ON OTHER ASPECTS:** APART FROM PRICE, OTHER ASPECTS OF THE TRANSACTION SUCH AS WARRANTY, DELIVERY, AND PAYMENT TERMS SHOULD ALSO BE OPEN FOR NEGOTIATION.

# OBJECTIVES

1. INCREASING SALES AND REVENUE
2. IMPROVING CUSTOMER EXPERIENCE
3. GAINING CUSTOMER INSIGHTS
4. SIMPLIFY ACCESS TO SELLERS TO PROMOTE THE PRODUCT AND BUYERS TO BUY PRODUCT FROM DIFFERENT SOURCES.

# SCOPE

1. **PLATFORM DEVELOPMENT:** DEVELOP A PLATFORM FOR BUYERS AND SELLERS BOTH.
2. **DATA ANALYSIS:** USE EMBEDDED INTELLIGENCE TO ANALYZE DATA FOR INSIGHTS.
3. **NEGOTIATION:** NEGOTIATE PURCHASE TERMS, INCLUDING PRICE, WARRANTY, DELIVERY, AND PAYMENT.

# TECHNICAL STACK

## FRONTEND

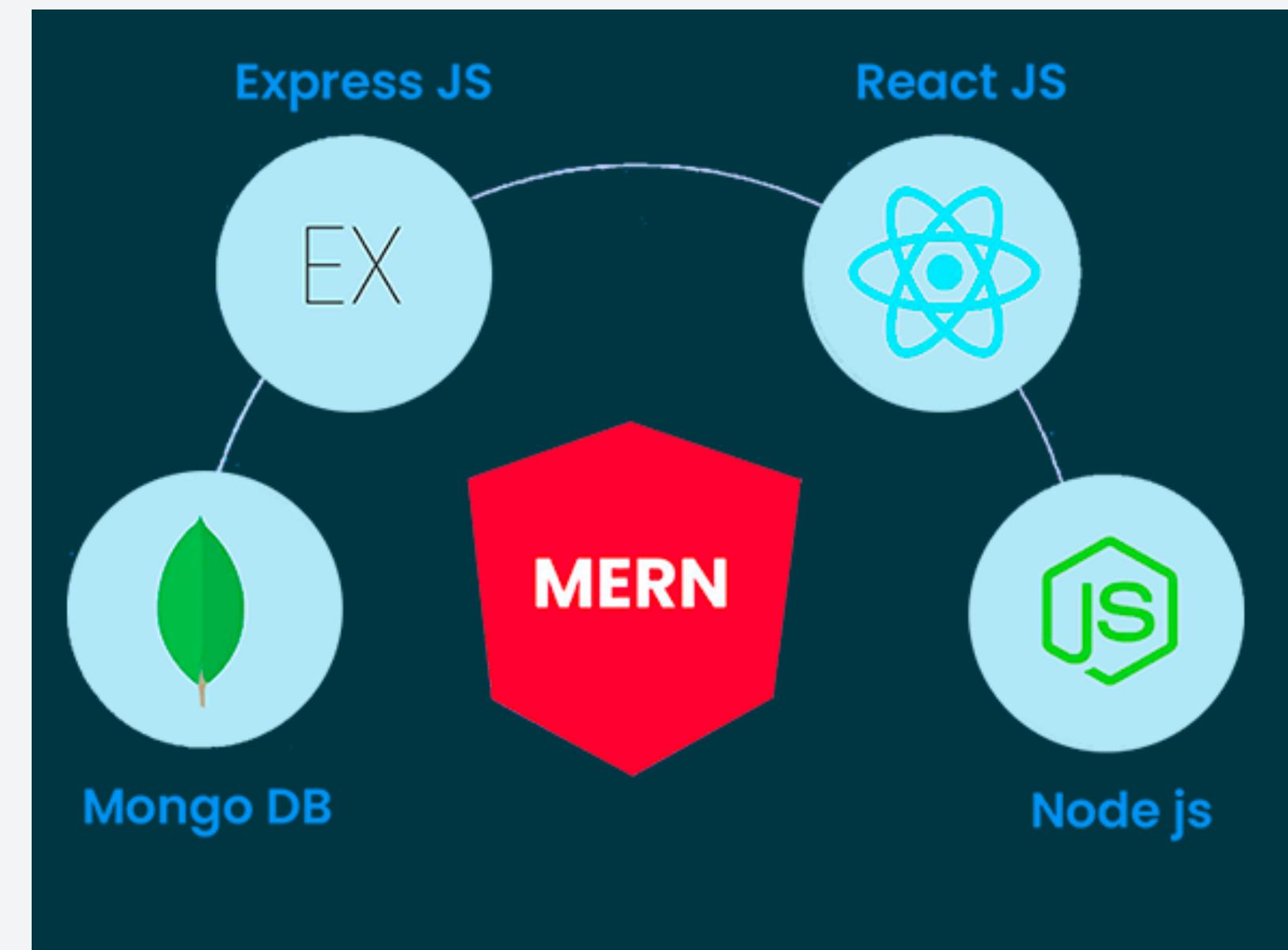
- USE REACT.JS TO BUILD A USER-FRIENDLY DASHBOARD AND WEBSITE FOR BOTH BUYER AND SELLER SEPARATELY.

## BACKEND

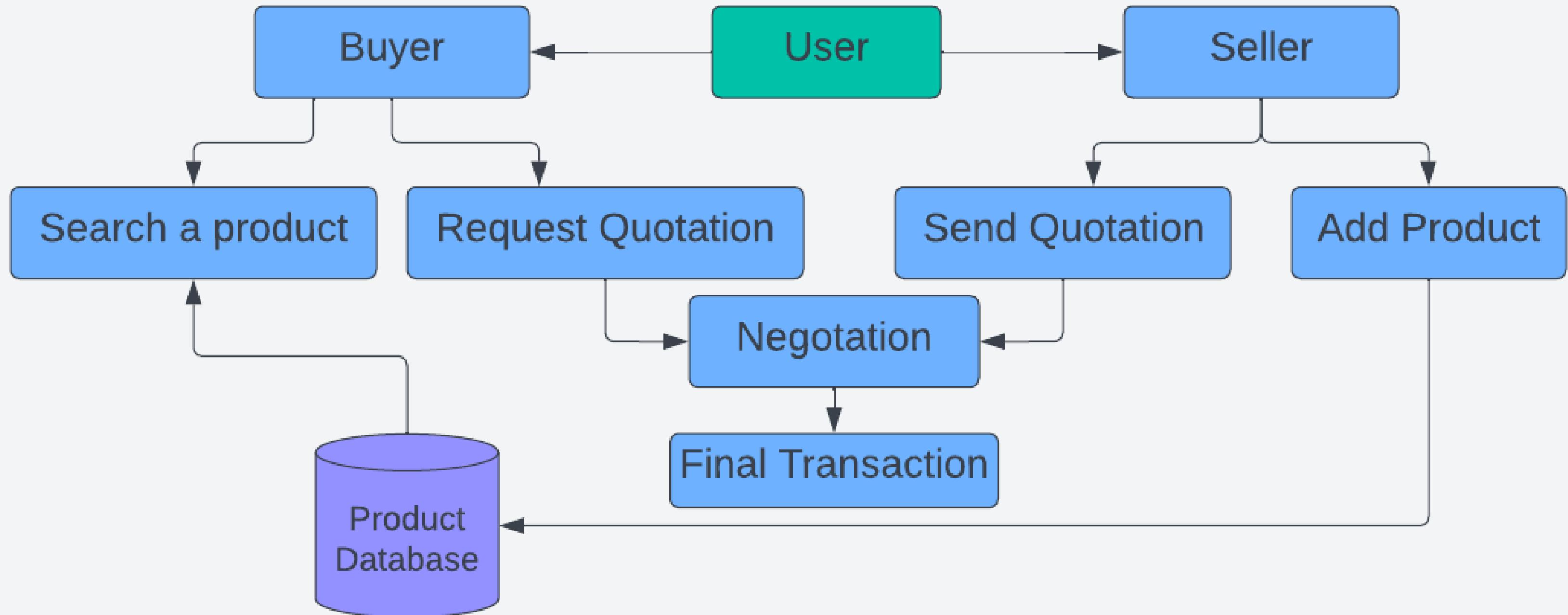
- USE EXPRESS.JS FRAMEWORK IN NODEJS FOR SERVER-SIDE OPERATIONS. THIS INCLUDES HANDLING API REQUESTS, RUNNING DATA ANALYSIS SCRIPTS, AND CONTROLLING AUTOMATED SYSTEMS.

## DATABASE

- USE MONGODB TO STORE BUYER AND SELLER DATA, PROCESSED DATA, AND NEGOTIATION DETAILS.

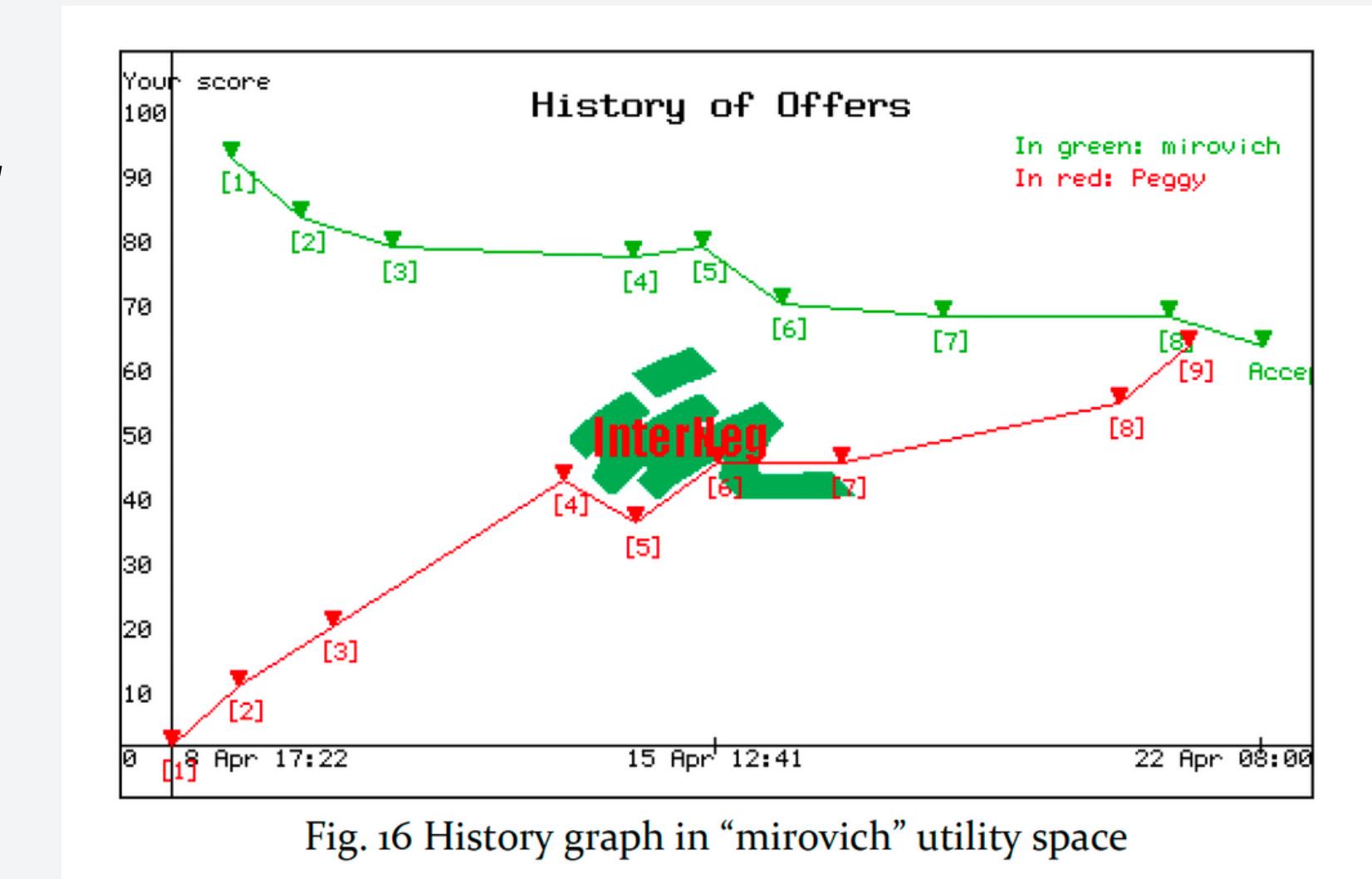


# ARCHITECTURE DIAGRAM



# REFERENCES

- <https://ondc.org>
- <https://mumbai.craigslist.org/>
- P. D. Sree, M. R. Kokkiligadda, J. Teja and Y. Sandeep, "Product Negotiation in E-Commerce Website", 2023



# SUPPLY CHAIN OPTIMIZATION



# PROBLEM STATEMENT

- **SUPPLY CHAIN COMPLEXITY:** THE INTRICATE NATURE OF MODERN SUPPLY CHAINS, INVOLVING MULTIPLE STAKEHOLDERS AND PROCESSES, NECESSITATES EFFECTIVE OPTIMIZATION SOLUTIONS.
- **INVENTORY MANAGEMENT CHALLENGES:** MAINTAINING OPTIMAL INVENTORY LEVELS WHILE MINIMIZING STOCKOUTS AND EXCESS INVENTORY PRESENTS A SIGNIFICANT CHALLENGE FOR BUSINESSES.
- **DEMAND FORECASTING ACCURACY:** ACCURATE PREDICTION OF FUTURE DEMAND IS ESSENTIAL FOR OPTIMIZING PRODUCTION SCHEDULES, PROCUREMENT DECISIONS, AND INVENTORY LEVELS.
- **REAL-TIME ANALYTICS:** PROVISION OF REAL-TIME ANALYTICS AND REPORTING CAPABILITIES ENABLES BUSINESSES TO MAKE DATA-DRIVEN DECISIONS AND QUICKLY RESPOND TO CHANGING MARKET CONDITIONS.

# OBJECTIVES

**1) ENHANCING SUPPLY CHAIN**

**2) IMPROVING INVENTORY CONTROL**

**3) FACILITATING SUPPLIER-BUYER  
INTERACTION**

# SCOPE

## **1. SUPPLY CHAIN VISIBILITY:**

- IMPLEMENT SYSTEMS TO PROVIDE END-TO-END VISIBILITY ACROSS THE SUPPLY CHAIN, FROM PROCUREMENT TO DELIVERY.

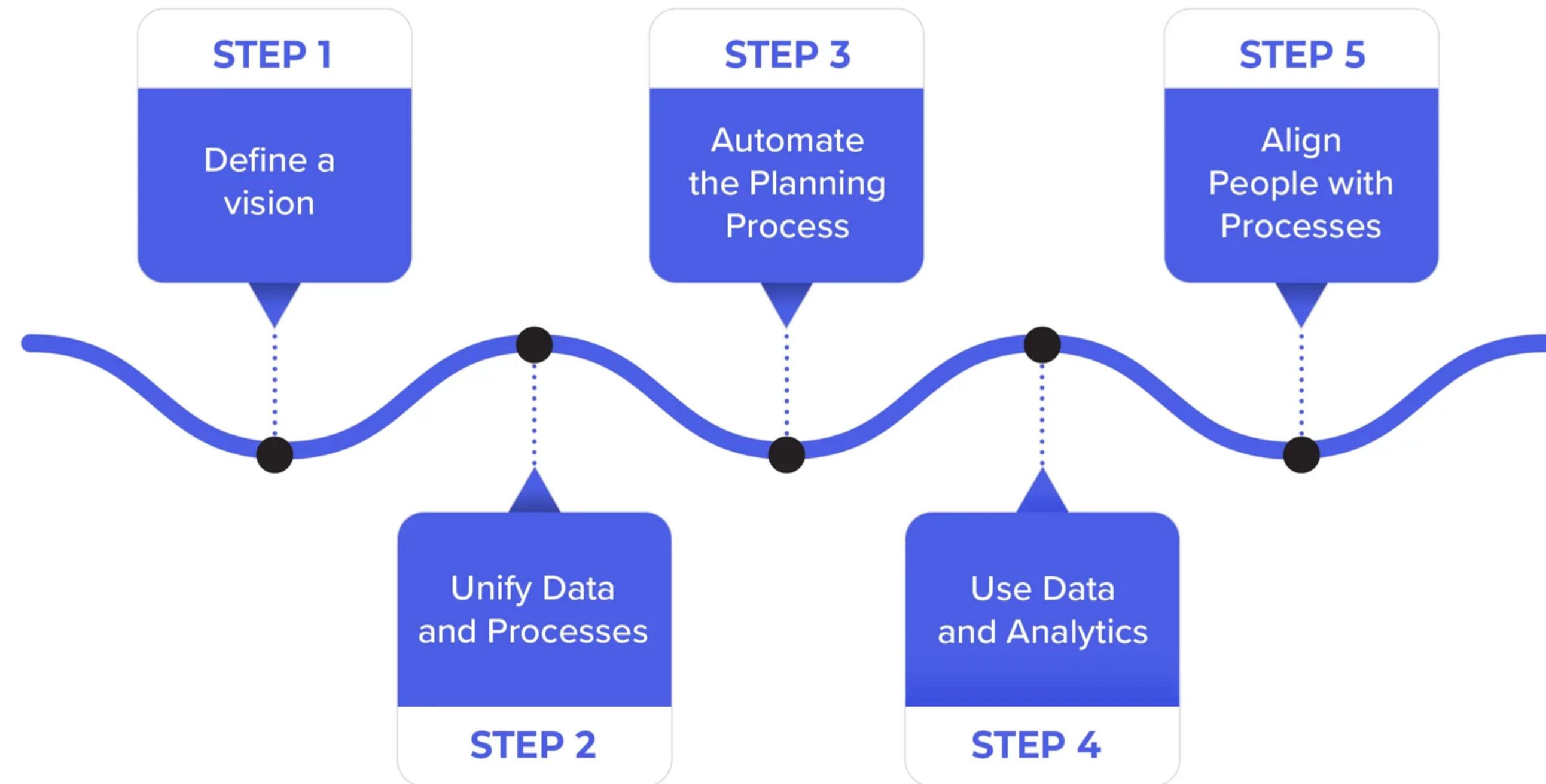
## **2. DEMAND FORECASTING:**

- IMPROVE INVENTORY PLANNING AND PRODUCTION SCHEDULING TO MEET CUSTOMER DEMAND EFFICIENTLY WHILE MINIMIZING STOCKOUTS AND EXCESS INVENTORY.

## **3. INVENTORY OPTIMIZATION:**

- IMPLEMENT STRATEGIES TO REDUCE CARRYING COSTS AND IMPROVE INVENTORY TURNOVER RATES.

# STEPS FOR SUPPLY CHAIN OPTIMIZATION



# TECHNICAL STACK

## FRONTEND

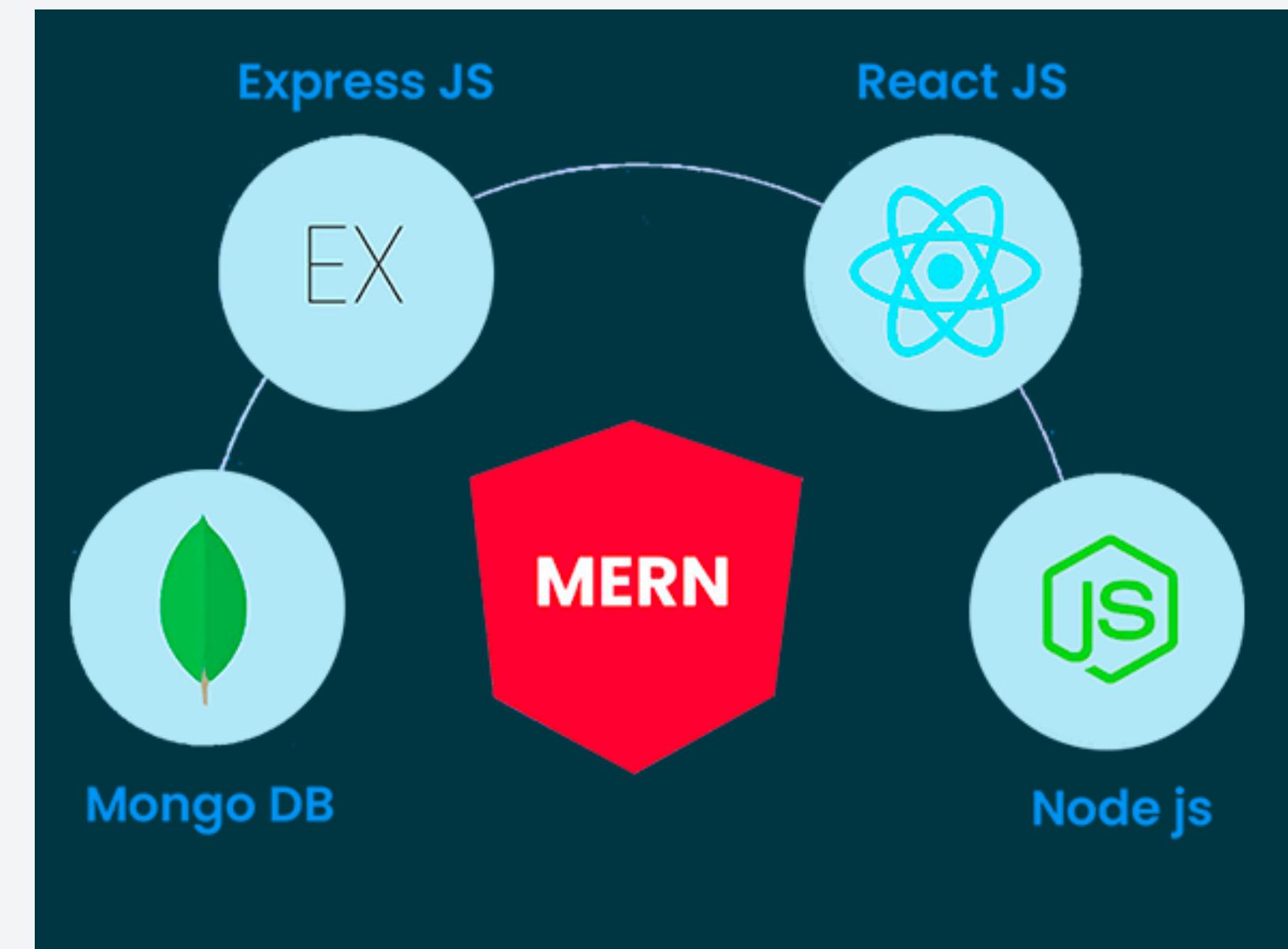
- USE REACT.JS TO BUILD A USER-FRIENDLY WEBSITE FOR SELLER AND BUYER INTERACTION

## BACKEND

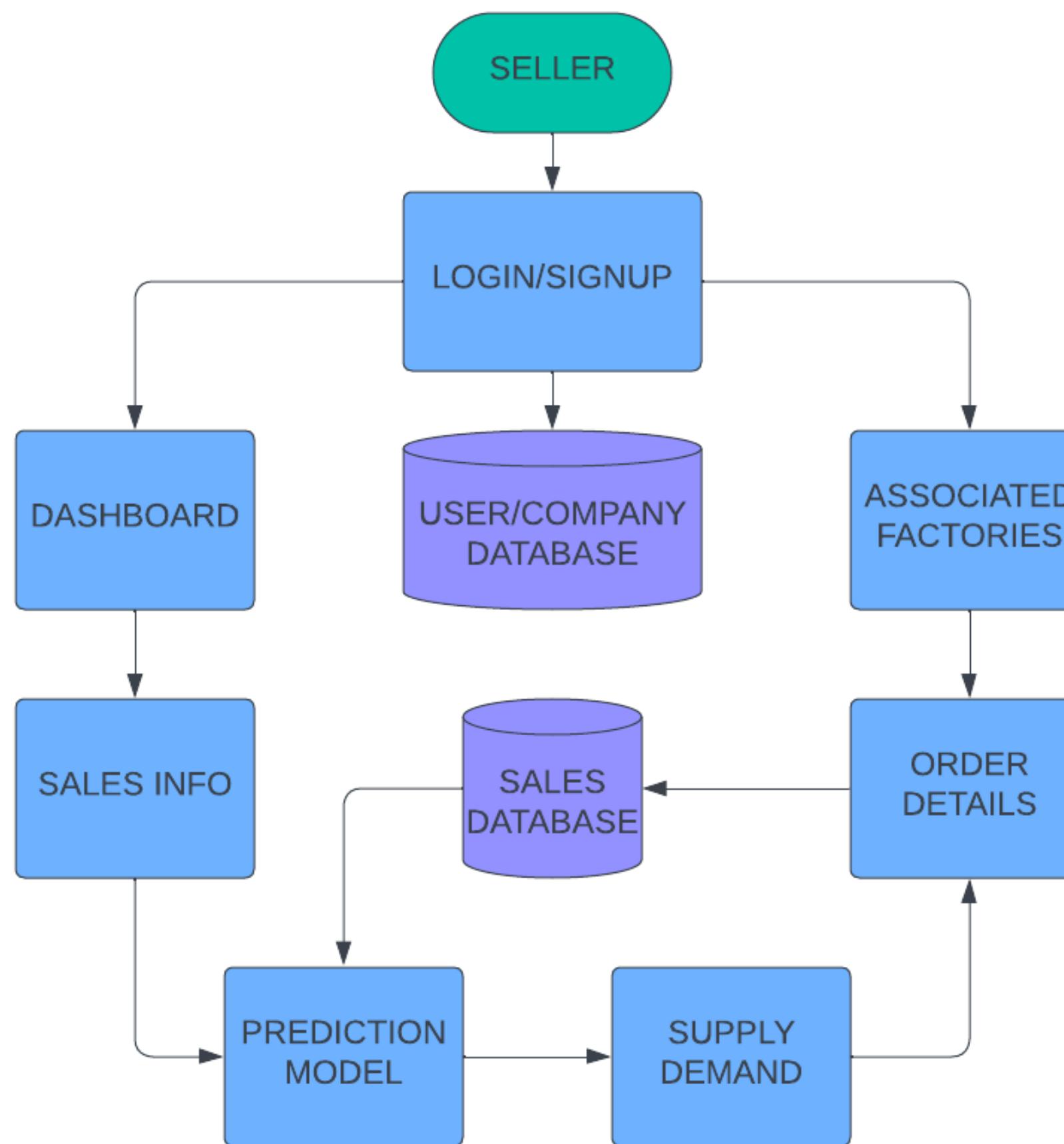
- USE EXPRESS.JS FRAMEWORK IN NODE.JS FOR SERVER-SIDE OPERATIONS. THIS INCLUDES , RUNNING DATA ANALYSIS SCRIPTS, AND PREDICTING FUTURE FIGURES.

## DATABASE

- USE MONGODB TO STORE BUYER AND SELLER DATA, PROCESSED DATA, PREDICTING DATA AND ANALYZING SALES FIGURES.



# ARCHITECTURE DIAGRAM



# REFERENCES

CHOPRA, S., & MEINDL, P. (2016). SUPPLY CHAIN MANAGEMENT: STRATEGY, PLANNING, AND OPERATION. PEARSON EDUCATION.

SIMCHI-LEVI, D., KAMINSKY, P., & SIMCHI-LEVI, E. (2014). DESIGNING AND MANAGING THE SUPPLY CHAIN: CONCEPTS, STRATEGIES, AND CASE STUDIES. MCGRAW-HILL EDUCATION.

LEE, H. L., PADMANABHAN, V., & WHANG, S. (2004). THE BULLWHIP EFFECT IN SUPPLY CHAINS. MIT SLOAN MANAGEMENT REVIEW, 38(3), 93-102.

# **SUMMARY**

**-PLANT CARE AUTOMATION-**

**-E-COMMERCE WEBSITE WITH NEGOTIATION ENGINE-**

**-SUPPLY CHAIN OPTIMIZATION-**

# **THANKYOU**