

# SMART INDIA HACKATHON 2025



## TITLE PAGE

- Problem Statement ID – N/A (Student Innovation)
- Problem Statement Title - A Secure and Personalized AI Chatbot for School Performance Monitoring
- Theme - Smart Education
- PS Category - Software
- Team ID - N/A
- Team Name - The AI Edugineers



## The Problem : A Daily Struggle for Both Parents and Teachers

Parents



Teachers



# A Secure and Personalized AI Chatbot for School Performance Monitoring



## ✓ Part 1: The Parent's Dilemma

- **Busy Schedules, Limited Time:** Most parents work from morning till evening. They can't call or visit during school hours without taking leave from their job.
- **Fear of Bothering Teachers:** Parents hesitate to ask too many questions on the phone. They worry about frustrating the teacher with detailed queries about fees, attendance, or daily progress.
- **Unanswered Questions:** A simple phone call isn't enough to get all the answers they need. They want to know everything—from today's homework to their child's classroom behavior—but they can't.
- **Feeling Helpless:** Ultimately, parents feel disconnected and helpless, unable to support their child at the right time.

# A Secure and Personalized AI Chatbot for School Performance Monitoring



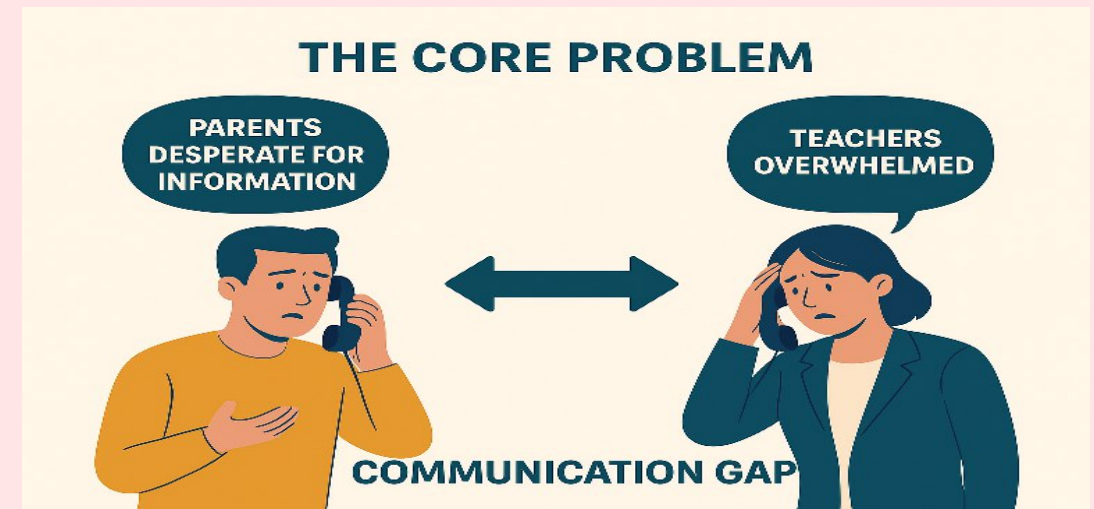
## ✓ Part 2: The Teacher's Burden

- Overwhelmed with Repetitive Questions: Answering the same questions (Was my child present today?) for 50 different parents every day is exhausting and becomes a "headache."
- Diffcult to Provide Details: It's nearly impossible for a teacher to instantly provide a full fee breakdown or a month's attendance record over a quick phone call.
- Calls After School Hours: Many parents call after school hours, disturbing the teacher's personal and family time.
- Avoiding Calls: After a while, some teachers may even start avoiding calls from parents who ask too many questions, just to get some peace.

# A Secure and Personalized AI Chatbot for School Performance Monitoring

## The Core Problem:

There is a huge communication gap. Parents are desperate for information, and teachers are too overwhelmed to provide it effectively. This gap prevents them from working together for the child's betterment.



# A Secure and Personalized AI Chatbot for School Performance Monitoring



## Our Solution : A 24/7 AI School Assistant in Every Parent's Pocket

- We provide a smart AI Chatbot that acts as a bridge between parents and the school.

How It Solves Every Problem:

- Freedom From Time: Parents no longer need to take leave from their job or wait for the 10 AM to 4 PM school hours. They can get information whenever they are free, even at midnight.
- Ask Anything, Get Instant Answers: Our chatbot gives real-time answers to all their questions. Parents can ask unlimited questions about their child's:
  - Daily Attendance & Homework
  - Test Marks & Subject Performance
  - Fee Status (How much is paid, how much is pending)
  - Classroom Behavior & Teacher's Feedback



# A Secure and Personalized AI Chatbot for School Performance Monitoring



- A Smart Advisor, Not Just a Data Machine: Our AI is truly smart. It doesn't just give information; it also gives helpful suggestions.
- For example, it will advise: "Your child's marks in Math are low. We suggest you connect with the teacher for extra support."
- It also gives reminders like: "The school fees for this month are pending. Please pay them soon to avoid a late fee."
- **The Final Result:** All tension and communication gaps are gone. Parents feel empowered and connected, and teachers are free to focus on what they do best—teaching.

# A Secure and Personalized AI Chatbot for School Performance Monitoring



**NO COST – ONLY ELECTRICITY**  
ONE-TIME SETUP



**SELF-HOST**

Own Private  
Service

**OLLAMA**  
**LLM**  
**LANGCHAIN**  
**PYTHON**

- **What Makes Us Unique? Our Self-Hosted AI**
- Our biggest innovation is simple: Our AI Chatbot is 100% private and self-hosted. It runs inside the school's own computer.
- This gives us three unbeatable advantages:
  1. Your Data, Your Control (100% Privacy)
    - We DO NOT use external AI from big companies (like ChatGPT/ Gemini).
    - This means a student's private data NEVER leaves the school's server. It is impossible for it to be leaked or misused by any outside company.



# A Secure and Personalized AI Chatbot for School Performance Monitoring



## 2. Freedom From High Costs (Zero Monthly Fees)

- Our solution has NO recurring monthly fees. Schools pay a small one-time setup cost.
- By using open-source technology, we make modern AI affordable for every school in India, even in rural areas.

## 3. Our Secret Weapon (Backed by Published Research)

- This is not just a student idea. Our solution is based on our own published scientific research paper.
- This proves our approach is well-planned, technically strong, and ready for the real world.

## CERTIFICATE OF APPRECIATION

*Proudly Presented to*

**PAVAN KUMAR BARMAN**

This certificate proudly recognizes Pavan Kumar Barman for successfully conceptualizing, developing, and gifting the "My School" – School Management System Application to R.P.P. Middle School, New Ramnagar, District Satna, Madhya Pradesh, as a heartfelt gesture of gratitude to his alma mater, where he completed his education from Class 1 to Class 8.

His independently designed application will significantly assist the school in streamlining academic and administrative operations, including attendance management, timetable scheduling, parent communication, and overall workflow efficiency.

The school community sincerely appreciates his dedication, technical expertise, and invaluable contribution towards enhancing the institution's digital infrastructure. His efforts stand as an enduring inspiration for present and future students.

Date: 12 August 2025

Place: New Ramnagar, District Satna, Madhya Pradesh

*[Signature]*  
HEAD MASTER  
R.P. Middle School

Shri Maan Keerti Shankar Patel  
Principal, R.P.P. Middle School

School Seal/Stamp

Issued with sincere gratitude on behalf of R.P.P. Middle School, New Ramnagar, District Satna, Madhya Pradesh.

- ✓ Our Solution is Not Just an Idea—It's Already Making a Real-World Impact.
- Point 1: We have successfully deployed and are operational at R.P.P. Middle School, Satna (M.P.).
- Point 2: The school is actively using our system, which is live as the "My School" application for their parent-teacher communication.
- Point 3: As proof of our solution's success and utility, we have been awarded a Certificate of Appreciation by the school administration.

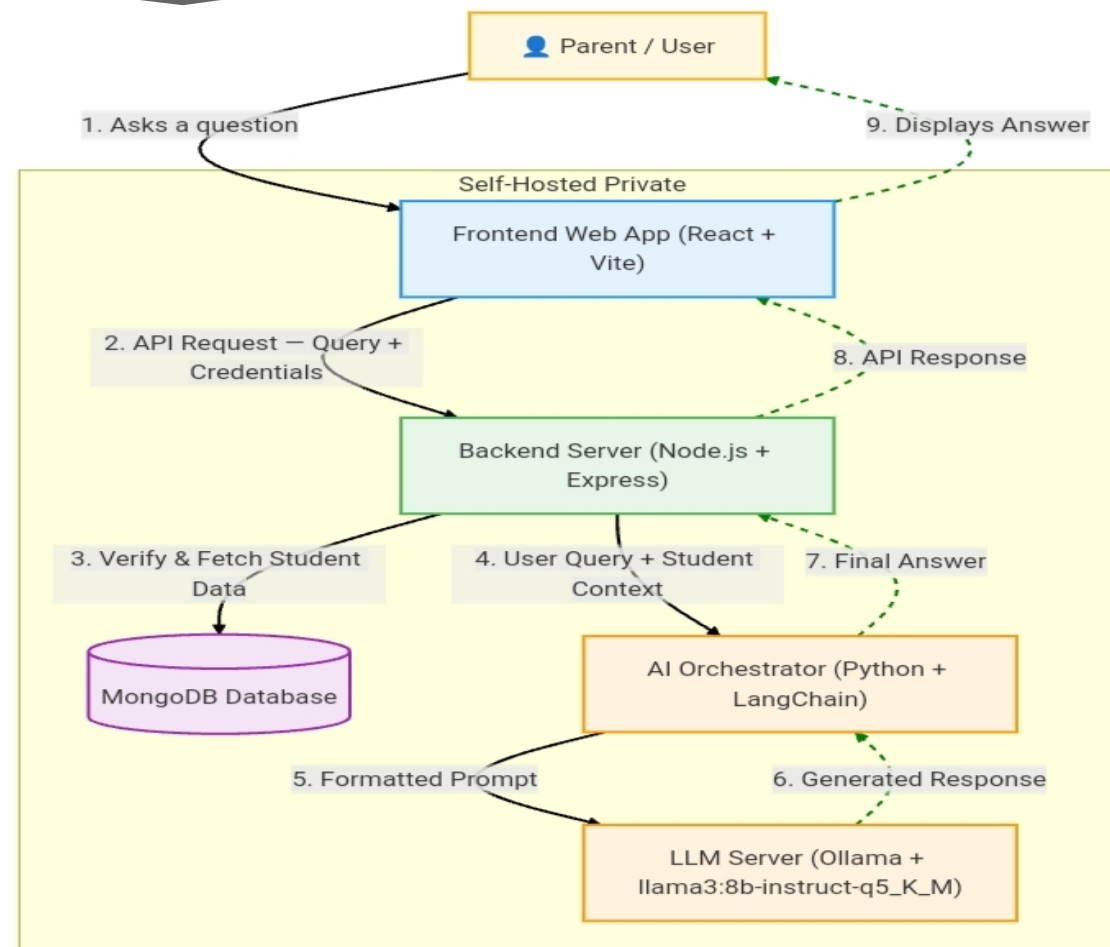
## ✓ How We Will Build It (Our Process)

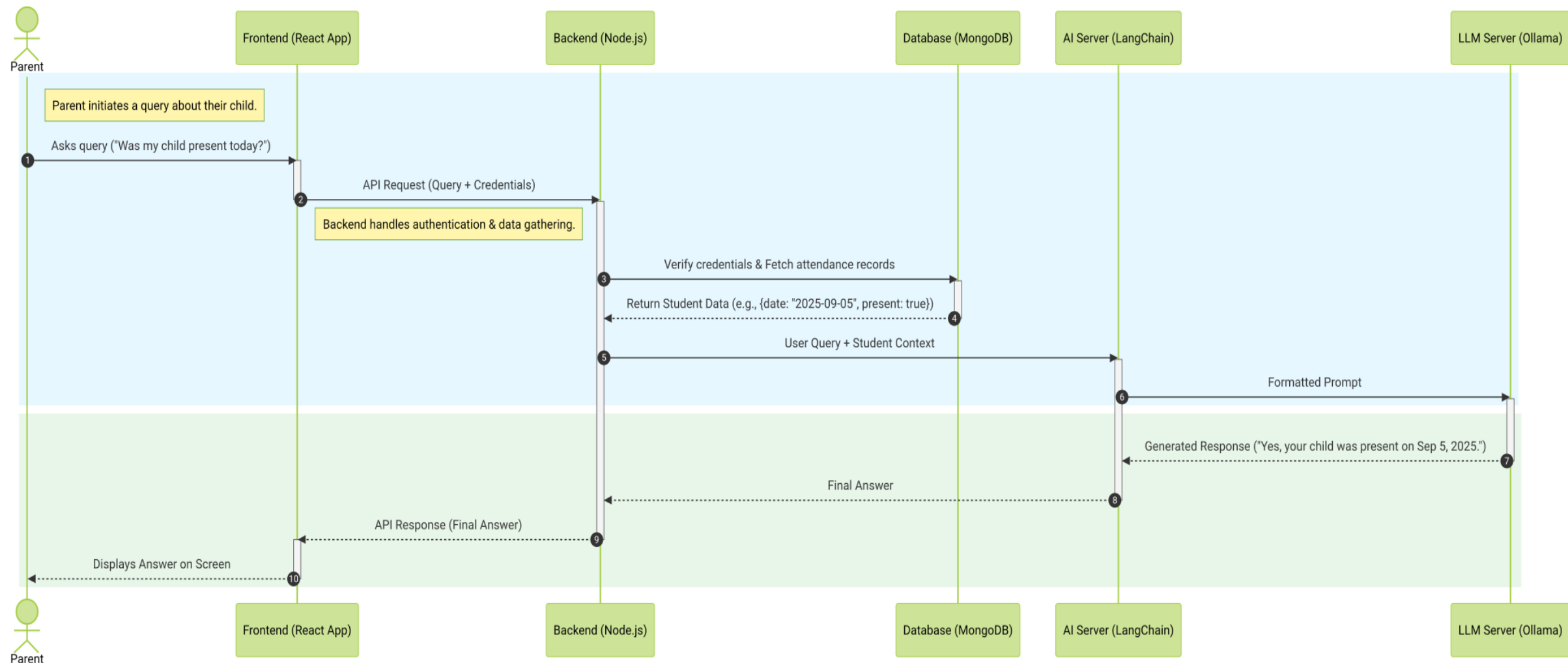
- Step 1: Setup Database: First, we will set up a secure MongoDB database to store student information like marks, attendance, fees, homework, assignment, exam, timetable, daily activities.
- Step 2: Build the AI Brain: We will use LangChain to connect our Local LLM with the database. This will allow the AI to find correct answers from the student data.
- Step 3: Create the Backend: We will use Node.js with Express.js to build the main server.

- Step 4: Design the User Interface: We will create a simple chat screen using React.js..
- Step 5: Integration and Testing: Finally, we will connect everything and test the chatbot with many different questions to make sure it gives accurate answers.

- Input: Parent asks a question on the secure web app.
- Process: Backend fetches student data, and our Local AI generates an answer privately.
- Output: A real-time, accurate response is displayed to the parent.

## System Architecture







AI Assistant ×

AI

नमस्ते! अपने बच्चे की परफॉरमेंस देखने के लिए, आप ऐसा लिख सकते हैं – "मुझे अपने बच्चे की परफॉरमेंस बताइए" या "मेरे बच्चे के बारे में जानकारी दें"

मुझे अपने बच्चे की परफॉरमेंस बताइए

AI

ज़रूर, मैं आपके बच्चे की जानकारी देने में मदद कर सकता हूँ। कृपया अपने बच्चे का 4 अंकों का रोल नंबर दर्ज करें।

2000

AI

रोल नंबर वेरिफाई हो गया है। अब कृपया पेरेंट सीक्रेट कोड दर्ज करें।

2000

AI

वेरिफिकेशन सफल हुआ। अब आप Sneha के बारे में कुछ भी पूछ सकते हैं।

Mujhe mere Bachche ke result ke baare me bataiye?

AI

...

AI Assistant ×

AI

रोल नंबर वेरिफाई हो गया है। अब कृपया पेरेंट सीक्रेट कोड दर्ज करें।

2000

AI

वेरिफिकेशन सफल हुआ। अब आप Sneha के बारे में कुछ भी पूछ सकते हैं।

Mujhe mere Bachche ke result ke baare me bataiye?

AI

आपके बच्चे, Sneha का परिणाम आपके लिए बताने के लिए हूँ। उनकी अंतिम मार्कशीट का सारांश यह है:

**अंतिम परिणाम:**  
कुल प्रतिशत: 88%  
फाइनल ग्रेड: A+  
नतीजा: PROMOTED  
विषय-वार प्रदर्शन:  
Hindi: 85/100 (ग्रेड: A+)  
English: 88/100 (ग्रेड: A+)  
Mathematics: 88/100 (ग्रेड: A+)  
Science: 86/100 (ग्रेड: A+)  
Social Studies: 93/100 (ग्रेड: A+)  
शिक्षक की टिप्पणी:  
Good 🙌  
आपके बच्चे ने अच्छा काम किया है, और उनकी अंतिम मार्कशीट में A+ ग्रेड और 88% प्रतिशत है। शिक्षक ने भी अच्छा काम किया है और "Good" टिप्पणी दी है।

## Live Demo Walkthrough

- Step 1: Secure Parent Login
- The chatbot first verifies the parent's identity using a unique roll number and a secret code.
- This ensures that student data is kept 100% private and secure.
- Step 2: Instant Performance Report
- After logging in, the parent asks a question in simple, natural language.
- The AI instantly provides all the details—including marks, grades, and teacher's feedback—in a clear summary.

Sneha ki poori fees details do . Kya ushki sari fees jama hai kitna baaki hi? All about

AI

Sneha की फीस डिटेल्स आपके लिए प्रस्तुत हैं। सबसे पहले, मैं आपको Sneha की फीस स्थिति बताता हूँ। कुल बकाया राशि ₹9800 है, जिसमें 12 महीनों की फीस का बकाया है। अब, अगर हम देखें तो Sneha की फीस स्थिति इस प्रकार है:

जनवरी (2024-2025) - ₹500 जमा, ₹500 बकाया
फरवरी (2024-2025) - ₹800 जमा, ₹200 बकाया
मार्च (2024-2025) - ₹900 जमा, ₹100 बकाया

अप्रैल (2024-2025) से जुलाई (2024-2025) तक - पूरी फीस का बकाया इसलिए, आपको Sneha की फीस का बकाया भुगतान करना होगा। मैं आपको सलाह देता हूँ कि आप जल्द से जल्द फीस का बकाया भुगतान करें ताकि Sneha के शैक्षिक संस्थान में उसकी पढ़ाई पर कोई प्रभाव न पड़े। आपके लिए कुछ सलाह है: आपको अपने बच्चे की फीस की स्थिति का कीर्प रखना चाहिए। बाक़ी फीस का भुगतान करने से पहले आप अपने बच्चे के शैक्षिक संस्थान से बात करें और जानकारी लें। आपको अपने बच्चे की फीस के लिए एक व्यवस्थित प्लान बनाया जाना चाहिए ताकि आप समय पर भुगतान कर सकें।

Ask about fees, attendance, marks... ➤

# TECHNICAL APPROACH



Feature Highlight: Detailed Fee Inquiry

- Parents can ask complex questions about fees in natural language.
- The chatbot provides a complete, month-by-month breakdown of paid and outstanding amounts.
- It also gives helpful advice to parents, making it a truly smart assistant.

...and many more. This is just a demo to showcase some of its key features.

Challenges	Our Solutions
✓ AI giving wrong answers	Use Real Data Only (Context Stuffing)
✓ Keeping student data safe	Two-Step Login + Private Server
✓ System Speed / Scalability	Modular Design for Easy Upgrades

For Parents	For Schools
Get instant information anytime.	A modern way to communicate.
Ask questions in natural language.	Reduces teachers' workload.
Strengthens parent-school relationship.	Full control over student data.

## Economic Benefits(saving money)

**Very Low Cost:** Uses free, open-source tech.

**No Monthly Fees:** No recurring payments to big companies.

**Affordable for All:** Even for schools in developing areas.

## Social Benefits (Helping People)

**Complete Data Privacy:** All data stays safe on the school's server.

**Builds Trust:** Creates transparency between parents and the school.

**Easy for Everyone:** Already supports regional languages like Hindi.

- P. K. Barman, "A secure and personalized ai chatbot for school performance monitoring using local LLM and MongoDB," TechRxiv, 2025,
- DOI:  
10.36227/techrxiv.175329513.35733860/v2  
Link: <https://doi.org/10.36227/techrxiv.175329513.35733860/v2>