

# KUSM

KATHMANDU UNIVERSITY SMART METER ANALYSIS SYSTEM

Team Lobic

# **Introduction to Kathmandu University Smart Meter Analysis System**

The Kathmandu University Smart Meter Analysis System is a dynamic, web-based platform designed to collect, analyze, and visualize real-time electrical data from smart meters across the campus.

# **Introduction to Kathmandu University Smart Meter Analysis System**

By integrating secure API communication, cloud-based storage, and predictive analytics, the system enhances energy transparency, operational efficiency, and academic engagement in modern smart grid technologies.

# Problem Statement

1

Lacked an independent smart meter monitoring system and relied entirely on the interface provided by iammeter.

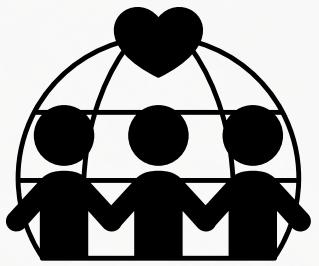
2

The existing iammeter platform lacked advanced analytics and predictive energy forecasting capabilities.

3

Dependence on a third-party service raised potential concerns regarding data integrity, long-term data ownership, and system reliability.

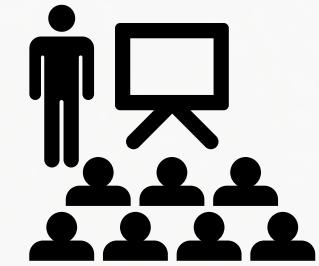
# Solution



Create a custom system  
for Kathmandu University  
hosting in its own server



Design a predictive  
algorithm for  
consumption pattern  
prediction



Authenticated access by  
separating categories for  
regular users, admin and  
super-admin

# Objectives

- 1 Develop a scalable web-based platform for real-time smart meter visualization.
- 2 Integrate secure APIs and cloud storage for automated data management.
- 3 Provide interactive analytics, reports, and graphical insights.
- 4 Implement predictive models for energy consumption forecasting.

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# Users

Regular Users

Admin

Super-admin

# Services Overview

Main Meter  
Analytics

Individual Meter  
Analytics

Prediction

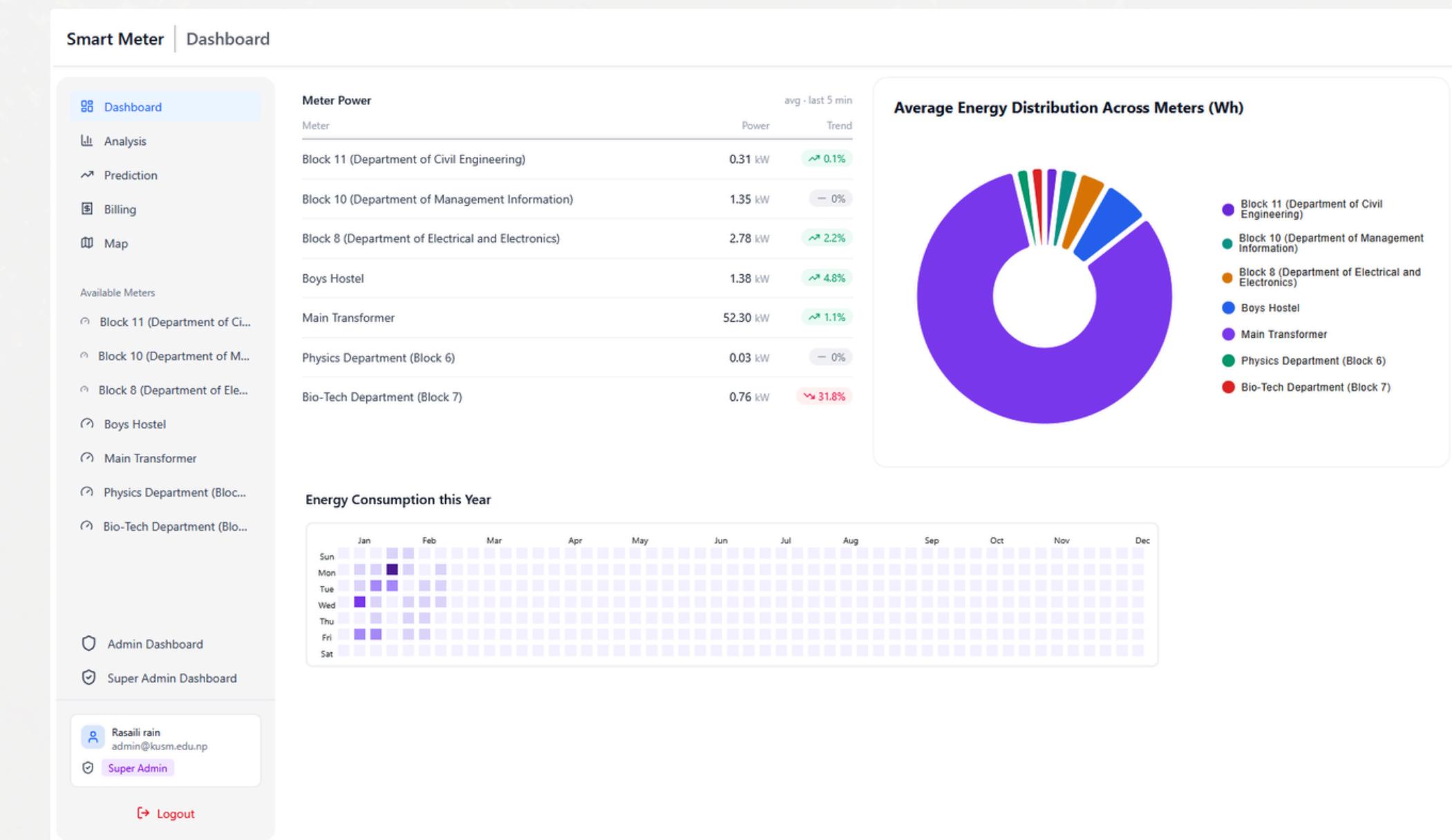
Authorization  
and  
authentication

Alert

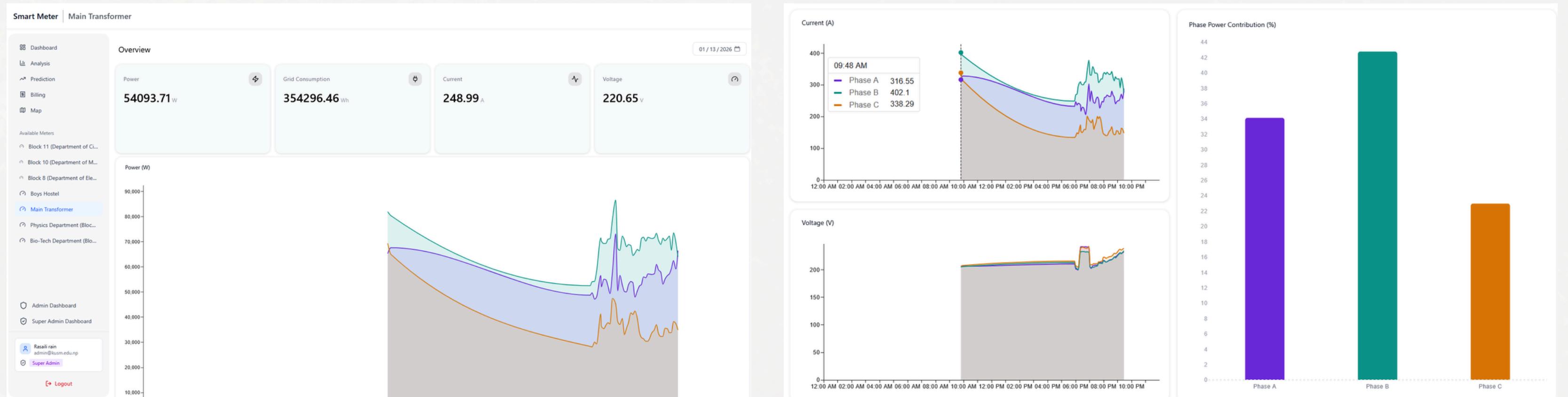
Billing

# — DashBoard / Meter Analytics

- Meters Overview
- Energy Consumption
- Energy Distribution



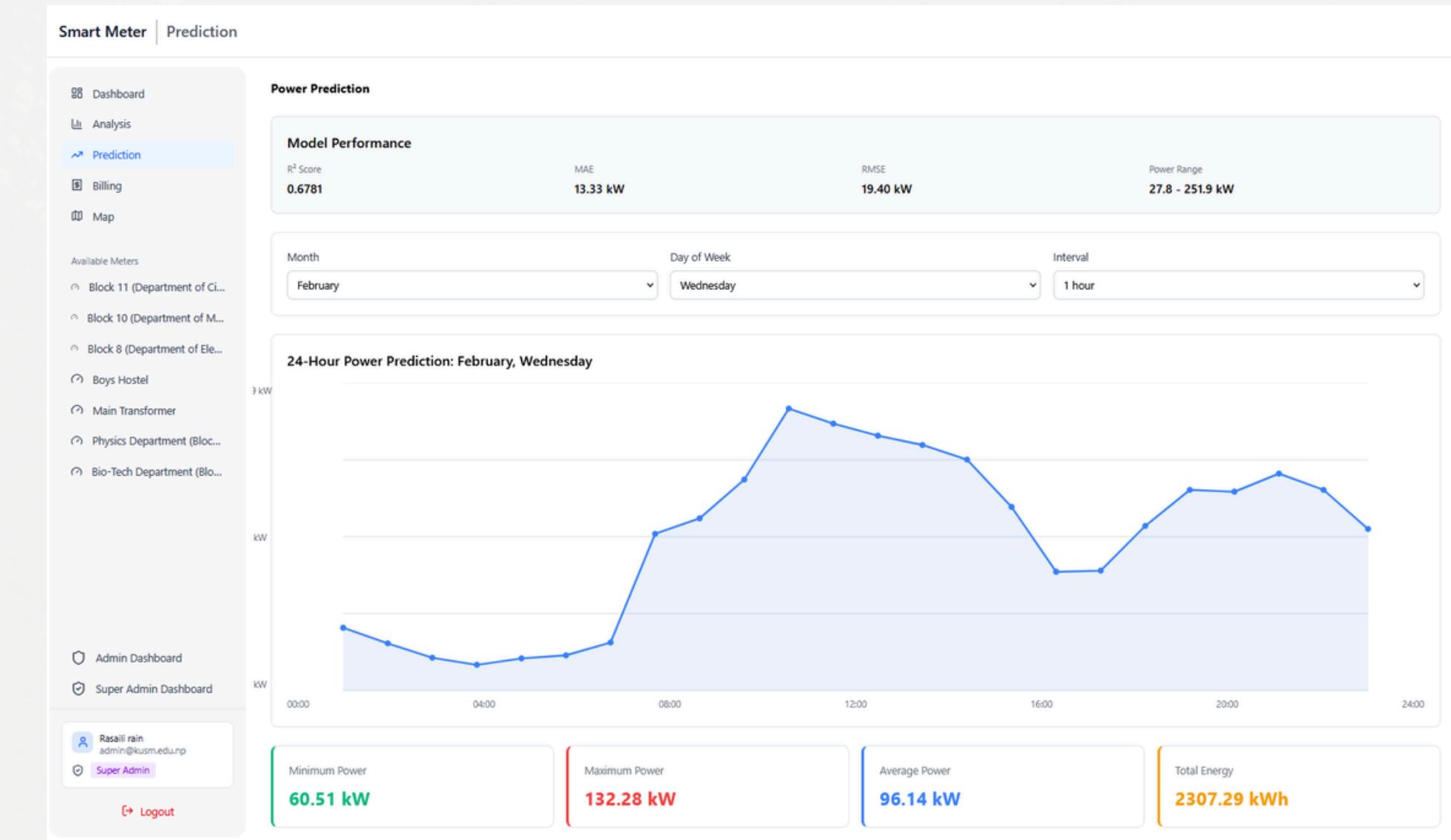
# Individual Meter Analytics



Real Time Meter Analytics for Main Transfomer

# Prediction

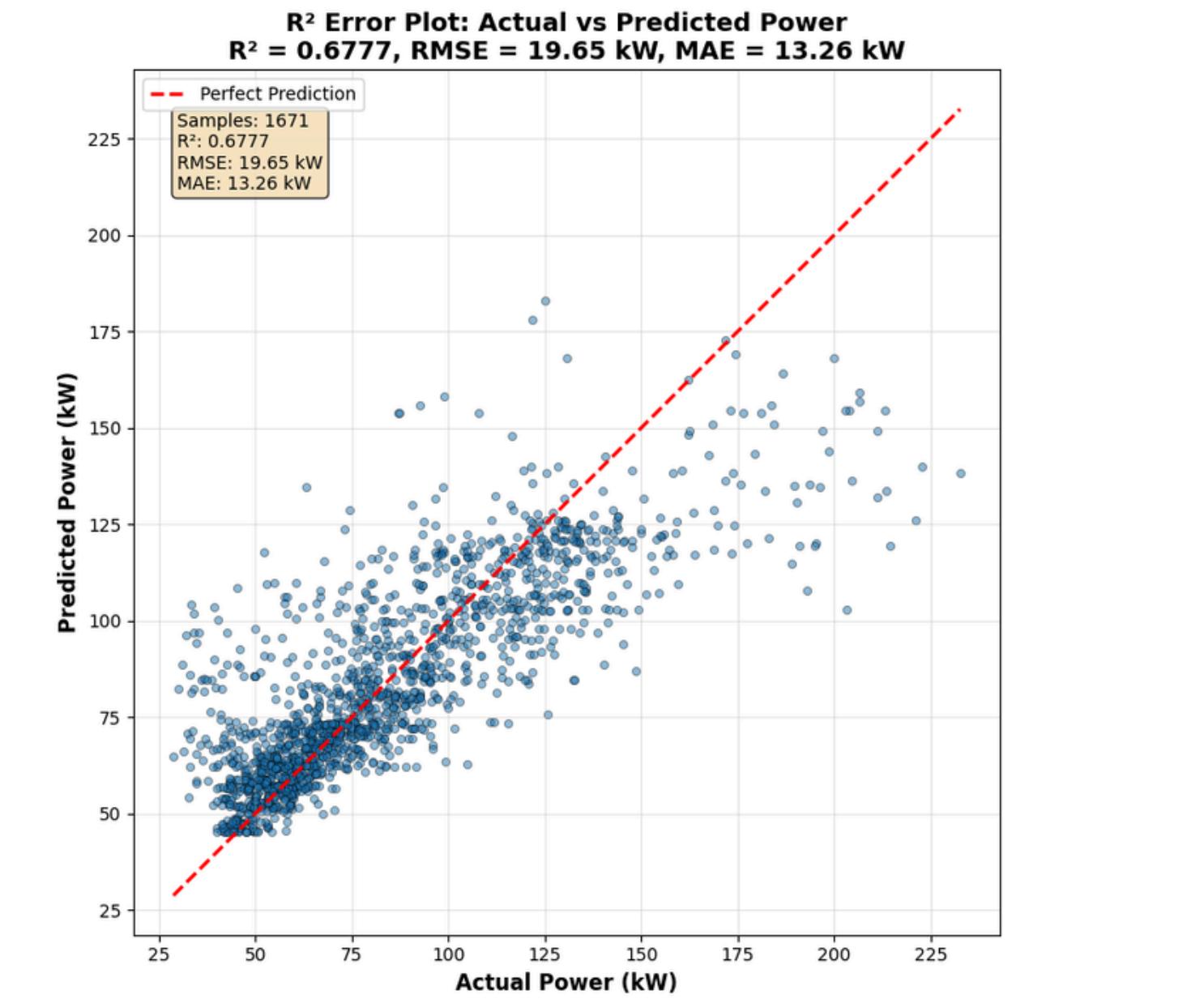
- Power Prediction
- Uses Random Forest algorithm



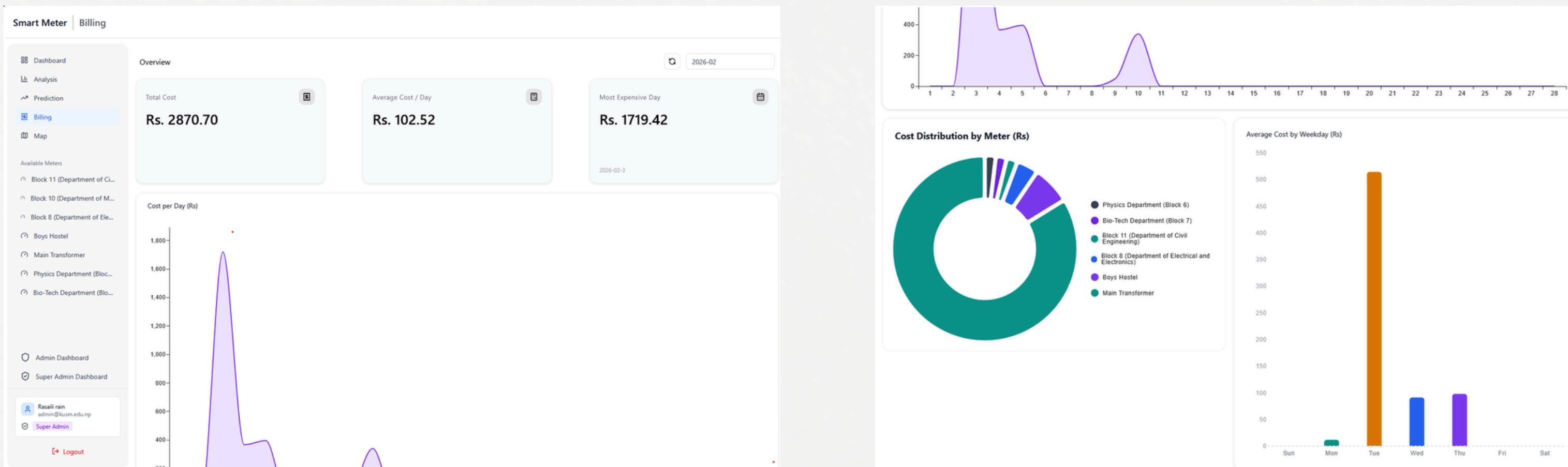
# Results of Prediction

Total Dataset Size: 8355 samples

- Training Samples: 6684
- Testing Samples: 1671
- Mean Absolute Error (MAE): 13.26 kW
- Root Mean Squared Error (RMSE): 19.65 kW
- Coefficient of Determination (R2 Score): 0.6777



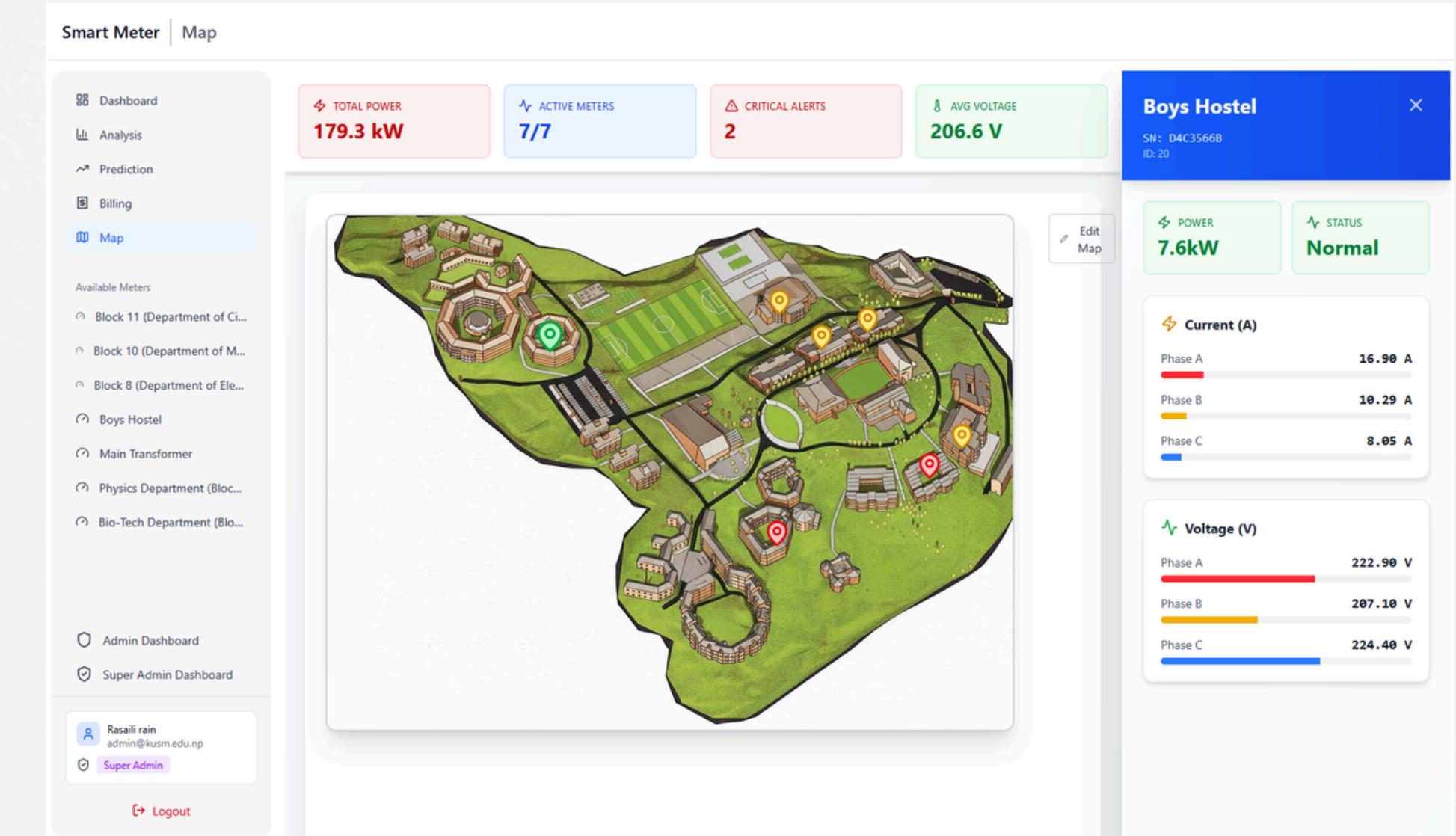
# Billing



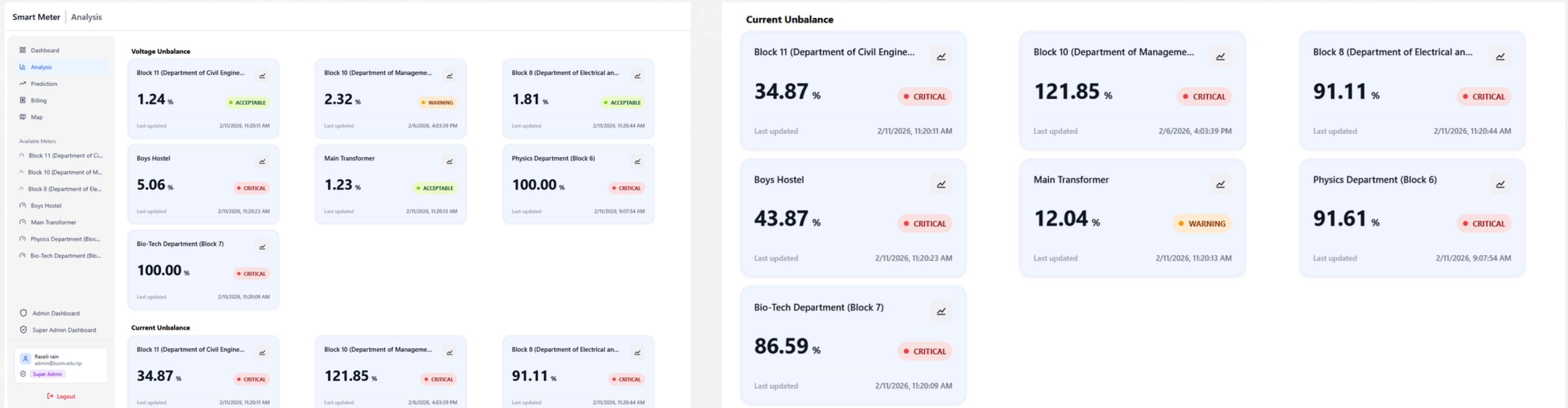
Billing analysis of the Meters and their Distribution

# Map

- Meter Locations of Each Meter
- Meter Status and Overview



# Voltage / Current Unbalance Analysis



# Tech Stack



# Team and Contacts



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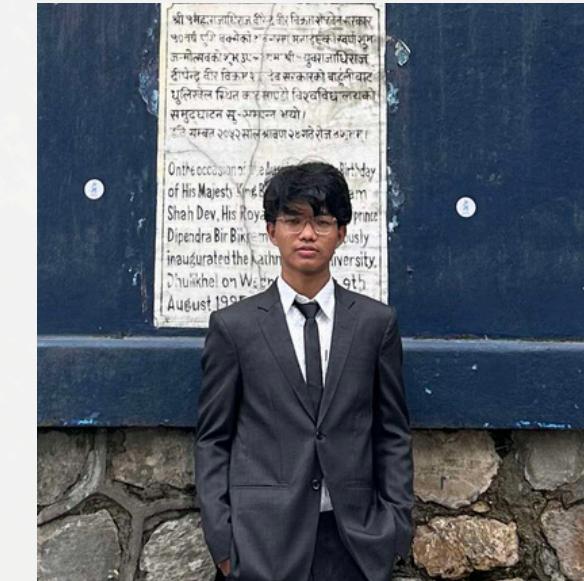
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# The End

THANK YOU FOR LISTENING

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