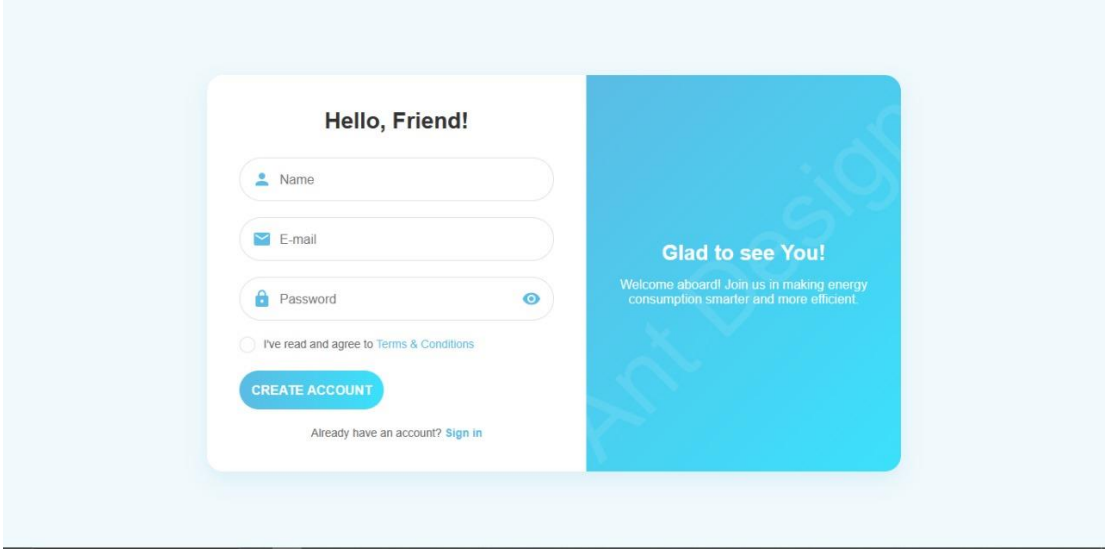
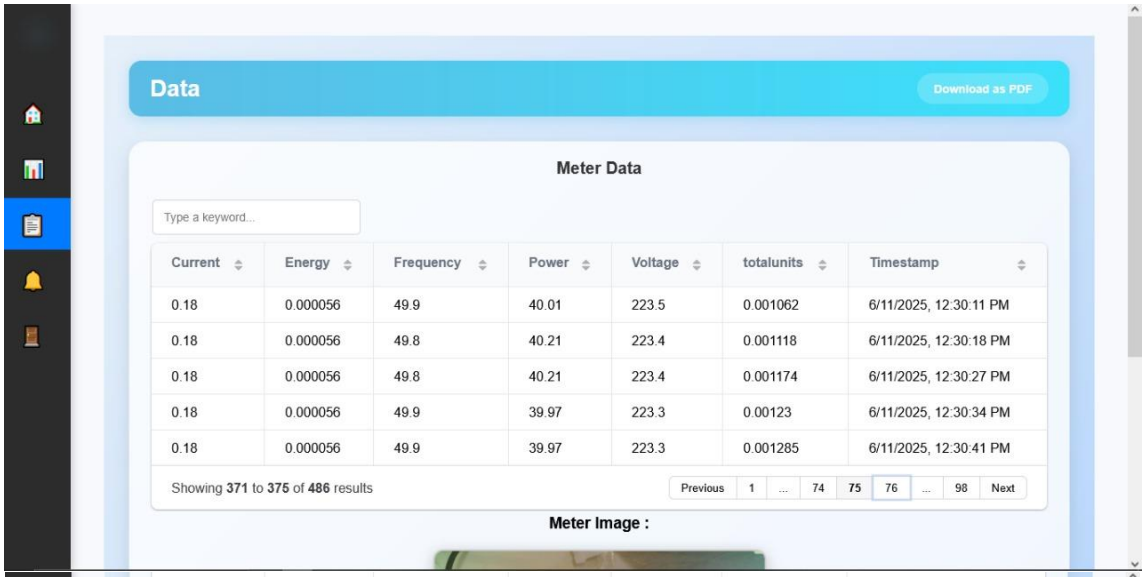
Final Year Project Showcase Batch 2021
Year 2025

	Department: Computer & Information Systems Engineering Programme: Computer & Information Systems Engineering
1	**Project Title** Automated Real-Time Monitoring and Consumption Analytics of K-Electric Meters Using Continuous Video-Based OCR and Mobile Data Reporting
2	**Project Idea** Our project is about making a system that can monitor electricity usage in real time. It uses a camera and energy sensor to read the electricity meter and sends the data to a web dashboard. The readings are processed using OCR (Optical Character Recognition) and shown to the user through a website. This helps users keep track of their electricity usage anytime without waiting for the monthly bill.
3	**Process** We started with research and requirement analysis. Then we designed the system and selected the hardware (ESP32-CAM and PZEM sensor). After that, we did the coding for the backend, connected the sensor with Firebase, and developed a web interface. We added features like real-time updates, usage history, alert system, and carbon emission tracking. Finally, we tested the system and made improvements where needed.
4	**Outcome** • Shows real-time electricity usage • Alerts users when their usage is high • Shows data on a live dashboard • Helps users manage their electricity better and avoid overloads • Estimates their carbon footprint
5	**Evidence (Theoretical Basis)** We used concepts from IoT, cloud computing, image processing, and energy monitoring. Our system is based on recent studies and real-world problems. We used Firebase, OCR tools, and sensors that are commonly used in smart energy systems. We also looked at similar projects and improved on them.
6	**Impact on Sustainability of Urban Regions or SDG-11 "Sustainable Cities and Communities"** This project helps users save energy by giving them live updates and usage alerts. It reduces the need for manual readings and makes the process digital. This supports SDG 11 because it helps make cities smarter and more energy-efficient.
7	**Competitive Advantage or Unique Selling Proposition** (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence
a	**Attainment of any SDG** It helps achieve SDG 7, 9, 11, and 12 by improving energy monitoring and promoting responsible usage.
b	**Environmental Aspect** The system tracks electricity usage and carbon emissions, helping users save energy and be more eco-friendly.
c	**Cost Reduction of Existing Product** It reduces bills by letting users see how much electricity they are using and avoid overuse.

d	**Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process** (e.g. What is the issue is current process and what improvement you suggests) It replaces manual readings with automatic updates, which saves time and reduces human error.	
e	**Expanding of Market share** (e.g. how it expand and what is the problem with the current market	
f	**Capture New Market** (e.g. Niche market or unaddressed segment) It can be used in houses, apartments, and even areas where smart meters are not available.	
g	**Any Other Aspect (Please tag it like above options)**	
8	**Target Market** (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service Households who want to monitor their electricity Utility companies (like K-Electric) Students and researchers working on energy projects Smart home users Anyone who wants to track their electricity usage in real time	
9	**Team Members** (Names along with email address	Group Leader : Abbas Raza, Email: cis.abbasraza@gmail.com Ibad UR Rehman, Email: ibadu44@gmail.com Hafsa Habib, Email : hafsahabib4621@gmail.com Aymen Fatima Hassan, Email: aym28fh@gmail.com
10	**Supervisor Name** (along with email address)	Supervisor : Prof .Dr. Syed Abbas Ali , Email:saaj@neduet.edu.pk Co-supervisor : Mr. Muhammad Ali Akhter, Email:Aliakhtar88@neduet.edu.pk
11	**Video (If any)**	You may please provide the link of the video to be accessible

Pictures (If any)




Data
Download as PDF
Meter Data
Type a keyword...
Current
Energy
Frequency
Power
Voltage
totalunits
Timestamp
0.18 0.000056 49.9 40.01 223.5 0.001062 6/11/2025, 12:30:11 PM
0.18 0.000056 49.8 40.21 223.4 0.001118 6/11/2025, 12:30:18 PM
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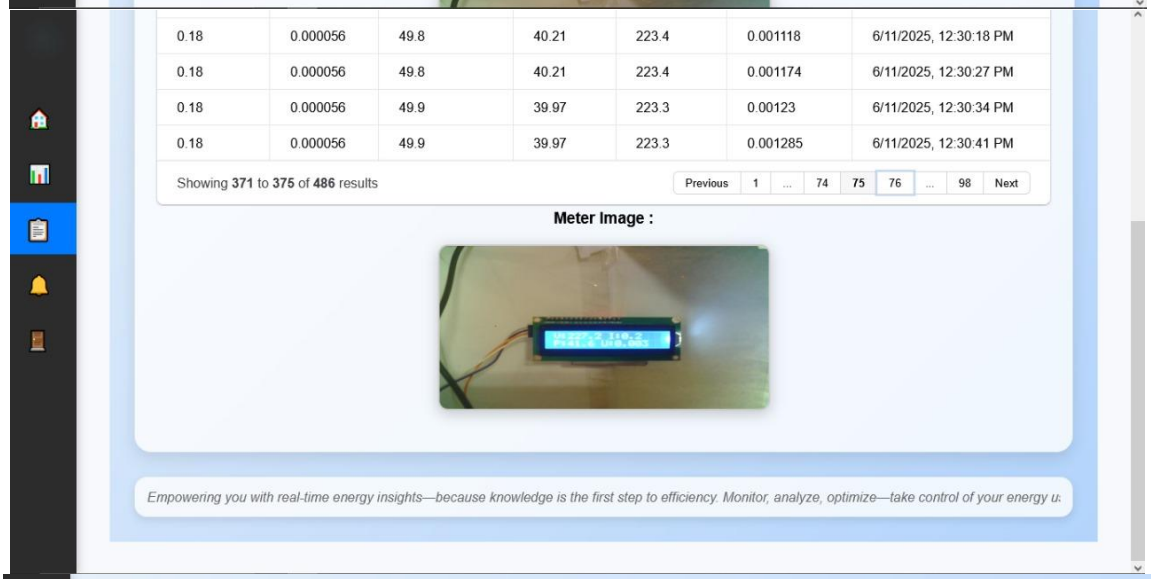
Showing 371 to 375 of 486 results
Previous 1 ... 74 75 76 ... 98 Next
Meter Image :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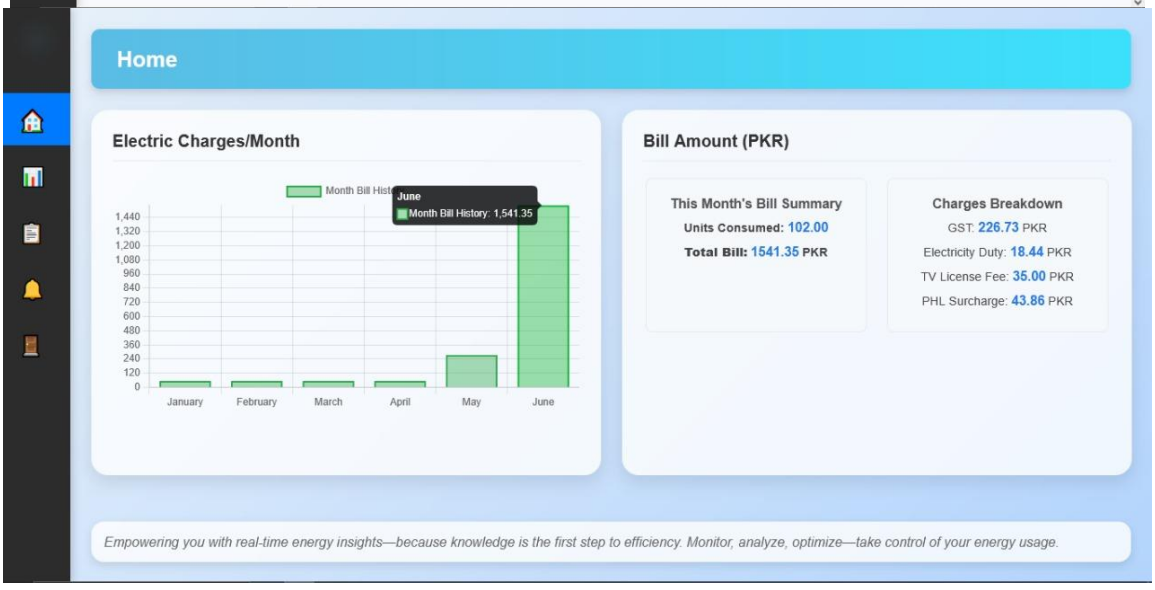
Meter Image :
Empowering you with real-time energy insights—because knowledge is the first step to efficiency. Monitor, analyze, optimize—take control of your energy u


Home
Electric Charges/Month
June
Month Bill History: 1,541.35
1,440
1,320
1,200
1,080
960
840
720
600
480
360
240
120
0
January
February
March
April
May
June
Bill Amount (PKR)
This Month's Bill Summary
Units Consumed: 102.00
Total Bill: 1541.35 PKR
Charges Breakdown
GST: 226.73 PKR
Electricity Duty: 18.44 PKR
TV License Fee: 35.00 PKR
PHL Surcharge: 43.86 PKR
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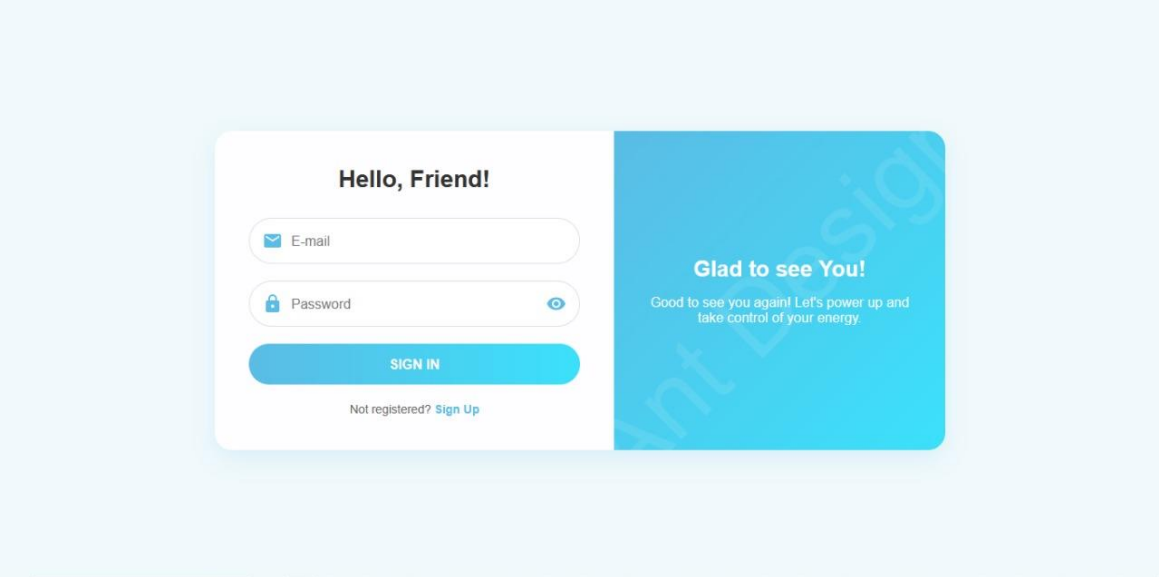
Hello, Friend!
E-mail
Password
SIGN IN
Not registered? Sign Up
Glad to see You!
Good to see you again! Let's power up and take control of your energy.


Dashboard
Energy Consume/Month
June
Average Units (kWh): 102
January
February
March
April
May
June
July
August
September
October
November
December
Real-Time Meter Readings
Voltage
226.2 V
V
Current
0.18 A
A
Power
41.17 W
W
Frequency
49.9 Hz
HZ
Time-units
0.000057 KWH
W
Total units used
0.004231 W
W
Real-Time Status
Online
Carbon-Emission
0.002158 KG
Trees Needed
0.000098 Tree-Needed Per year
Usage Summary
Last 0.000057 kWh
Refresh Data
Refresh