User Input Parameters

Desired Temperature Range (°C):

22 25

18 30

Desired Humidity Range (%):

40 60

30 70

Maximum Energy Consumption (kW):

5.00 − +

Number of Time Steps (Minutes):

60 − +

RL Agent Settings

Learning Rate:

0.010 − +

Discount Factor (Gamma):

0.95 − +

Exploration Rate (Epsilon):

0.10 − +

Number of Training Episodes:

100 − +

Visualization Settings

- [x] Show Comfort Score Chart
- [x] Show Energy Consumption Chart

Energy-Efficient HVAC Control Syste

This application uses a Reinforcement Learning (RL) agent to optimize energy consumption in HVAC maintaining comfortable indoor conditions.

Simulated Environment Data

	Time Step	Temperature (°C)	Humidity (%)	Energy Usage (kW)
11	12	24.2068	50.4595	1.1579
12	13	22.7222	55.3741	0.5755
13	14	22.0784	51.9219	4.1457
14	15	24.6129	45.338	3.1044
15	16	22.2934	52.0812	3.7243
16	17	23.6159	53.0374	2.406
17	18	23.844	56.7745	4.7036
18	19	23.8309	56.0184	0.9132
19	20	22.8949	59.9366	1.558
20	21	24.0729	43.0767	2.2203

Train RL Agent

Training RL Agent...

Training completed!

Energy Consumption and Comfort Score Analysis

Chart 1: Comfort Score Over Episodes

This chart displays the comfort score achieved by the RL agent during each episode. A higher score i maintenance of comfortable indoor conditions.

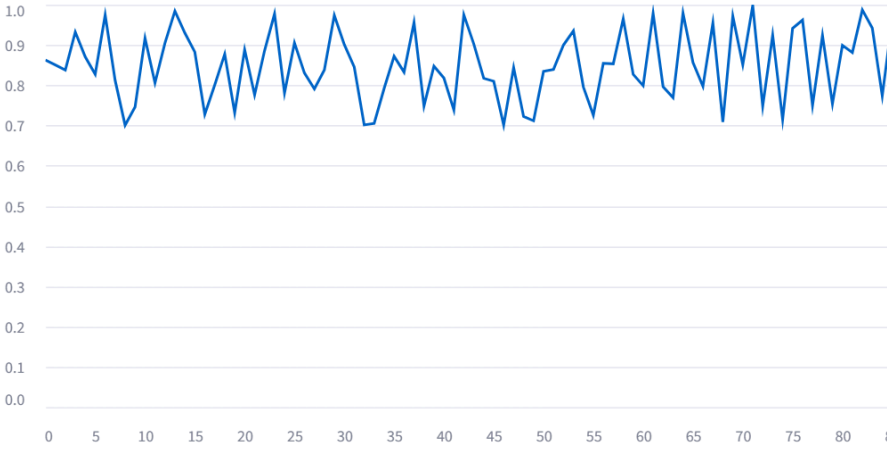


Chart 2: Energy Consumption Over Episodes

This chart illustrates the energy consumption by the HVAC system during each episode. Lower energ indicates more efficient operation.

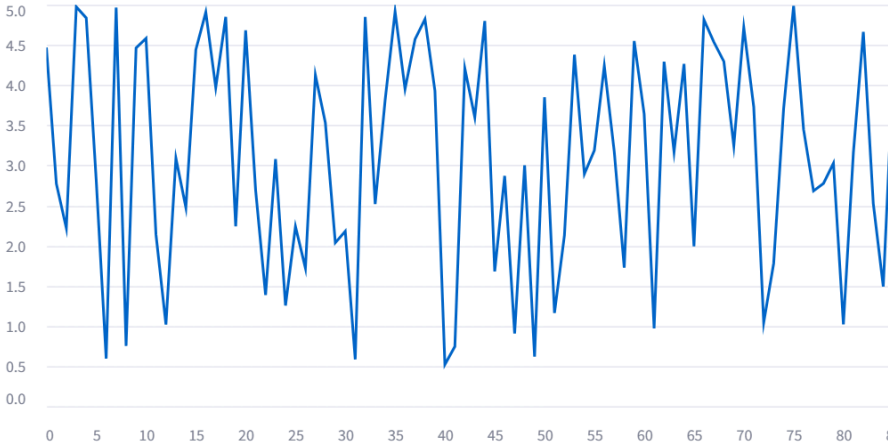
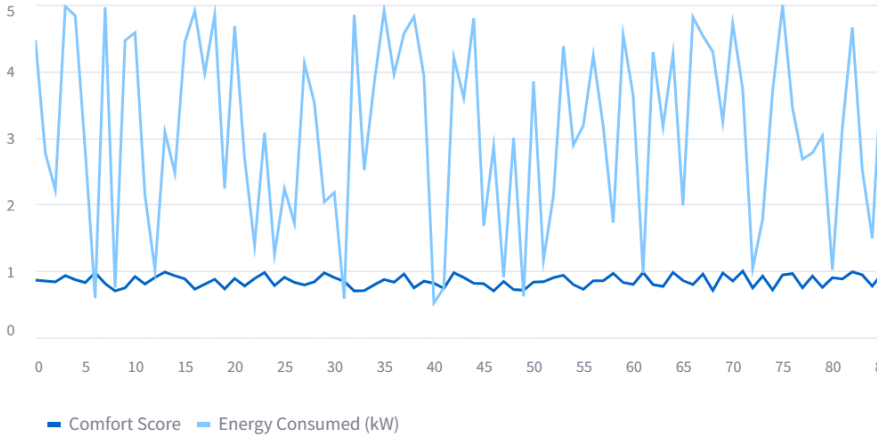


Chart 3: Combined Performance Metrics

This chart provides a combined view of both comfort scores and energy consumption metrics, helpi
the trade-offs between maintaining comfort and minimizing energy usage.



Summary Statistics

	Metric	Value
0	Average Comfort Score	0.8456
1	Average Energy Consumed (kW)	3.0934
2	Minimum Energy Consumed (kW)	0.5209
3	Maximum Energy Consumed (kW)	4.9845