Campus Hydramind

AI-Based Smart Water Monitoring & Conservation System

AI for Sustainability – IBM 1M1B Virtual Internship

Submitted by

1. Sudeep Patnayak G

B.Tech – Computer Science & Engineering (Data Analytics)

Alliance University, Bengaluru

2. Darshan E S

B.Tech – Computer Science & Engineering (Data Analytics)

Alliance University, Bengaluru

3. R Vinoth Kumar

B.Tech – Computer Science & Engineering (Data Analytics)

Alliance University, Bengaluru

Primary Sustainable Development Goal (SDG): SDG 6 – Clean Water and Sanitation

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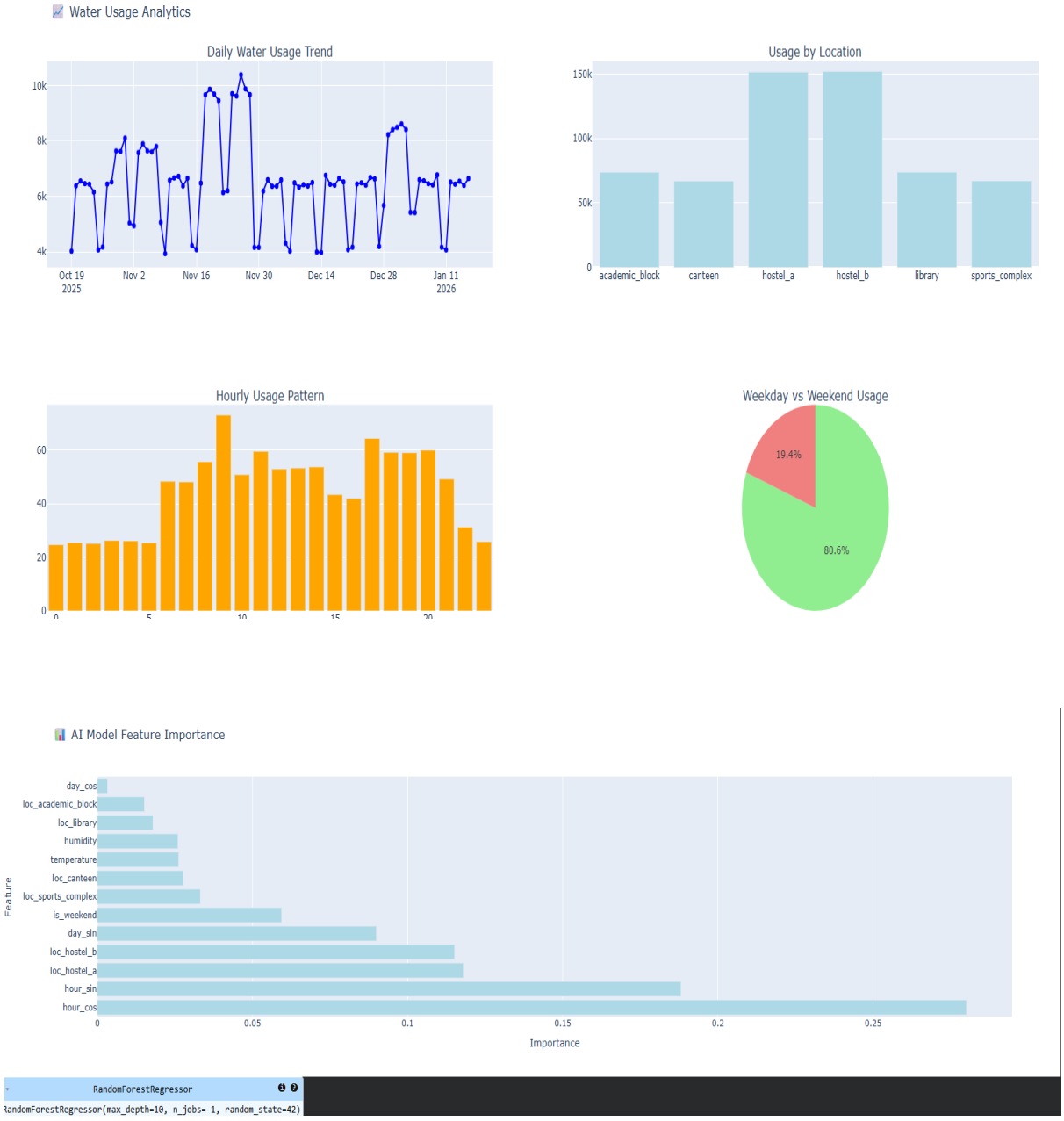
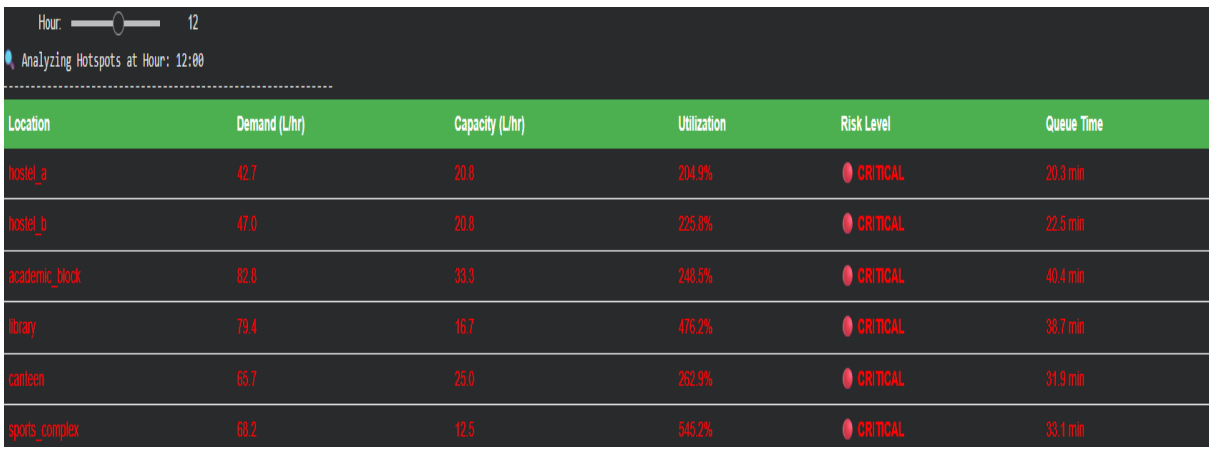
2025–26

PROTOTYPE/DEMO SCREENSHOTS





Location	Demand (L/hr)	Capacity (L/hr)	Utilization	Risk Level	Queue Time
hostel_a	42.7	20.8	204.9%	CRITICAL	20.3 min
hostel_b	47.0	20.8	225.8%	CRITICAL	22.5 min
academic_block	82.8	33.3	248.5%	CRITICAL	40.4 min
library	79.4	16.7	476.2%	CRITICAL	38.7 min
canteen	65.7	25.0	262.9%	CRITICAL	31.9 min
sports_complex	68.2	12.5	545.2%	CRITICAL	33.1 min

	Location	Predicted Demand (L/hr)	Capacity (L/hr)	Utilization (%)	Risk Level	Queue Time (min)	Color
0	hostel_a	42.69	20.833333	204.912	CRITICAL	20.345	red
1	hostel_b	47.04	20.833333	225.792	CRITICAL	22.520	red
2	academic_block	82.83	33.333333	248.490	CRITICAL	40.415	red
3	library	79.97	16.666667	476.220	CRITICAL	38.685	red
4	canteen	65.72	25.000000	262.880	CRITICAL	31.860	red
5	sports_complex	68.15	12.500000	545.200	CRITICAL	33.075	red

PREDICTIVE MAINTENANCE DASHBOARD

Dispenser	Location	Filter Age	Est. Life	Days Left	Alert	Action
d1	hostel_a	45 days	64.8 days	19.8 days	NORMAL	Monitor
d2	hostel_b	60 days	86.4 days	26.4 days	NORMAL	Monitor
d3	academic_block	30 days	32.4 days	2.4 days	NORMAL	Monitor
d4	library	75 days	81.0 days	6.0 days	NORMAL	Monitor
d5	canteen	90 days	64.8 days	0.0 days	NORMAL	Monitor
d6	sports_complex	120 days	86.4 days	0.0 days	NORMAL	Monitor

Budget 20000

OPTIMIZATION RECOMMENDATIONS

Available Budget: $20,000

Found 6 optimization opportunities:

Location	Current Util	Projected Util	Queue Reduction	Cost	Payback	Priority	Water Savings
sports_complex	545.2%	218.1%	17.0 min	$5,000	15285.0 days	HIGH	164.0 L
library	476.2%	190.5%	19.8 min	$5,000	13124.0 days	HIGH	190.0 L
canteen	262.9%	105.2%	16.4 min	$5,000	15850.0 days	HIGH	158.0 L
academic_block	248.5%	99.4%	20.7 min	$5,000	12576.0 days	HIGH	199.0 L
hostel_b	225.8%	90.3%	11.8 min	$5,000	22144.0 days	HIGH	113.0 L
hostel_a	204.9%	82.0%	10.7 min	$5,000	24401.0 days	HIGH	102.0 L

Summary for $20,000 budget:
- Can implement 4 recommendations
- Total investment: $20,000
- Annual savings: $519
- ROI: -97.4%
- Payback period: 14065 days

	Location	Current Util (%)	Projected Util (%)	Queue Reduction (min)	Cost (USD)	Payback (days)	Priority	Water Savings (L/day)
5	sports_complex	545.2	218.1	17.0	5000	15285.0	HIGH	164.0
3	library	476.2	190.5	19.8	5000	13124.0	HIGH	190.0
4	canteen	262.9	105.2	16.4	5000	15850.0	HIGH	158.0
2	academic_block	248.5	99.4	20.7	5000	12576.0	HIGH	199.0
1	hostel_b	225.8	90.3	11.8	5000	22144.0	HIGH	113.0
0	hostel_a	204.9	82.0	10.7	5000	24401.0	HIGH	102.0

Projected Impact with AI Optimization