



Machine Learning in the Age of AI

From classroom concepts to real-world decisions

Case. Before a campus building begins its day, estimate energy demand and decide whether a high-demand alert is useful. All data in this lecture is synthetic.

1 Decision

Who receives the prediction, and what could they do with it?

2 Target

Is energy use a number, a category, or both depending on the task?

3 Inputs

Circle the values known before the day: temperature · planned hours · expected occupancy · floor area · end-of-day meter.

4 Baseline

Training-mean baseline: 19.53 kWh validation MAE. Permitted-input model: 7.46 kWh. What improved, and what is still unknown?

5 Hand calculation

Actual: 100, 120, 140 kWh. Predicted: 110, 115, 135 kWh. Calculate MAE.

6 Alert

Which error matters more to your hypothetical team: a false alert or a missed high-demand day? State your assumption.

7 Audit

Why is the end-of-day meter invalid for a before-day prediction?

8 Next experiment

Name one check needed before a real pilot.

TURN OVER FOR THE EVIDENCE MAP →



A model is an evidence chain

01 Frame

Name the decision, prediction time and target.

02 Audit

Remove inputs that arrive after the decision; inspect missingness and provenance.

03 Baseline

Choose a simple reference before adding complexity.

04 Fit

Train model and preprocessing on training data only.

05 Choose

Compare candidates and thresholds on validation data.

06 Report

Use a held-out test after choices are frozen; state limits.

07 Operate

If piloted, monitor inputs, errors, change and rollback.

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