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topics list for sat class
Story framing(movie dataset) — goal, label, features, probability vs class, threshold choice
ML map + mini history — AI/ML/DL, supervised vs unsupervised, regression vs classification
Training basics — train/val/test, overfitting, regularization idea, feature scaling/encoding recap
Linear regression — what it predicts, assumptions, when it works, why not ideal for classification
Logistic regression — probabilities, decision boundary intuition, interpretability, regularization intuition
Metrics — confusion matrix, accuracy limits, precision/recall/F1, ROC-AUC vs PR-AUC, threshold-by-cost
Decision trees — splitting intuition, impurity idea, stopping/pruning, overfitting, interpretability
Ensembles — bagging/Random Forest intuition, boosting intuition, when to pick which
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topic list for sunday class
Story framing (music genre classification) — why harder than movies; audio features vs raw audio; success metric
Classical ML ceiling — linear limits; tree/ensemble tradeoffs; representation learning motivation
Neural network basics — neuron/layer; hidden layers as feature builders; multi-class output intuition
Training loop — forward pass; loss; backprop; updates; epochs/batches; train vs validation
Backprop intuition — gradients meaning; chain-rule flow; common training failure symptoms (high level)
Activations — why nonlinearity; ReLU vs sigmoid/tanh; output activation concept
Optimizers + learning rate — LR symptoms; SGD vs momentum vs Adam; practical defaults
Generalization — overfitting signs; early stopping; dropout/weight decay intuition; leakage reminder

Transcripts