UPES

UNIVERSITY WITH A PURPOSE
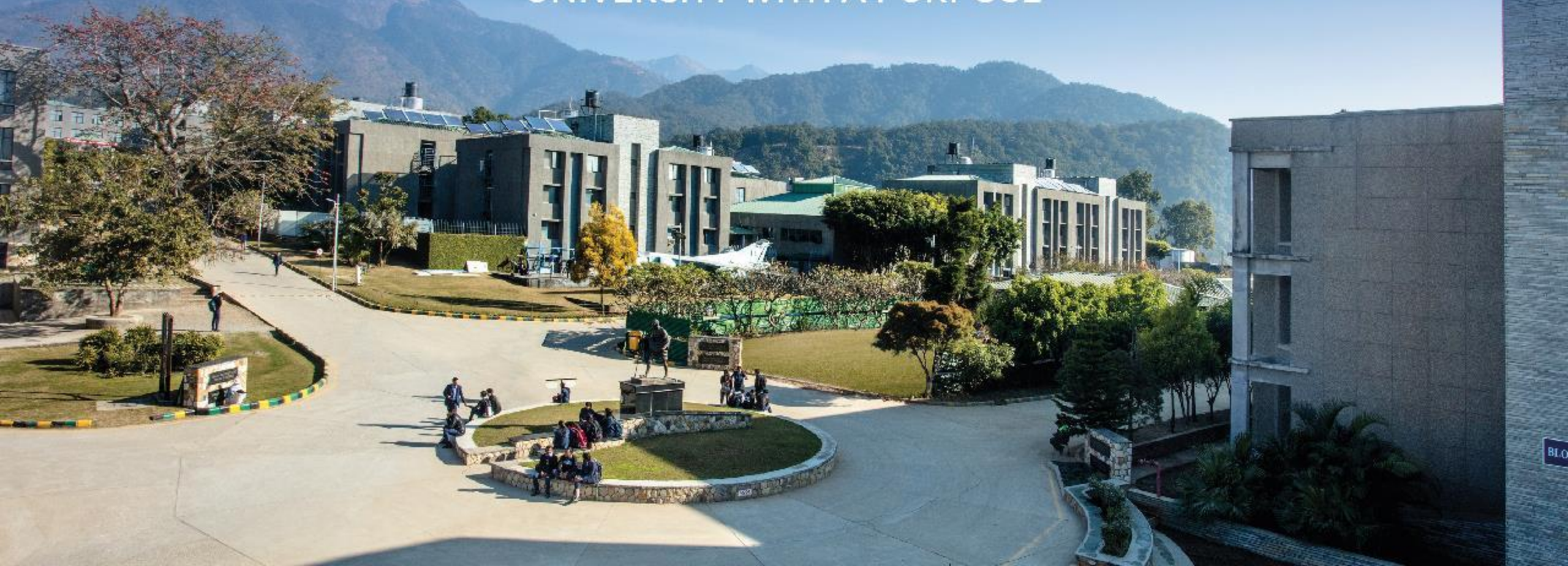
Pattern and Anomaly Detection
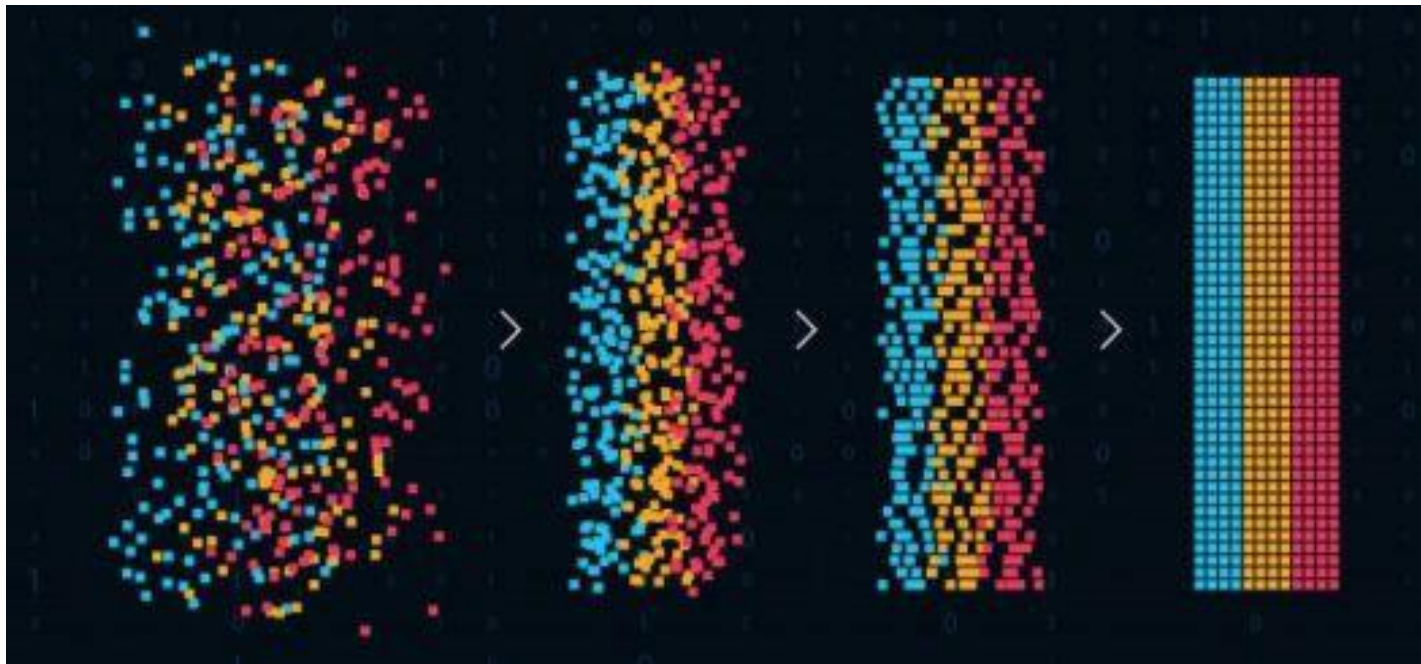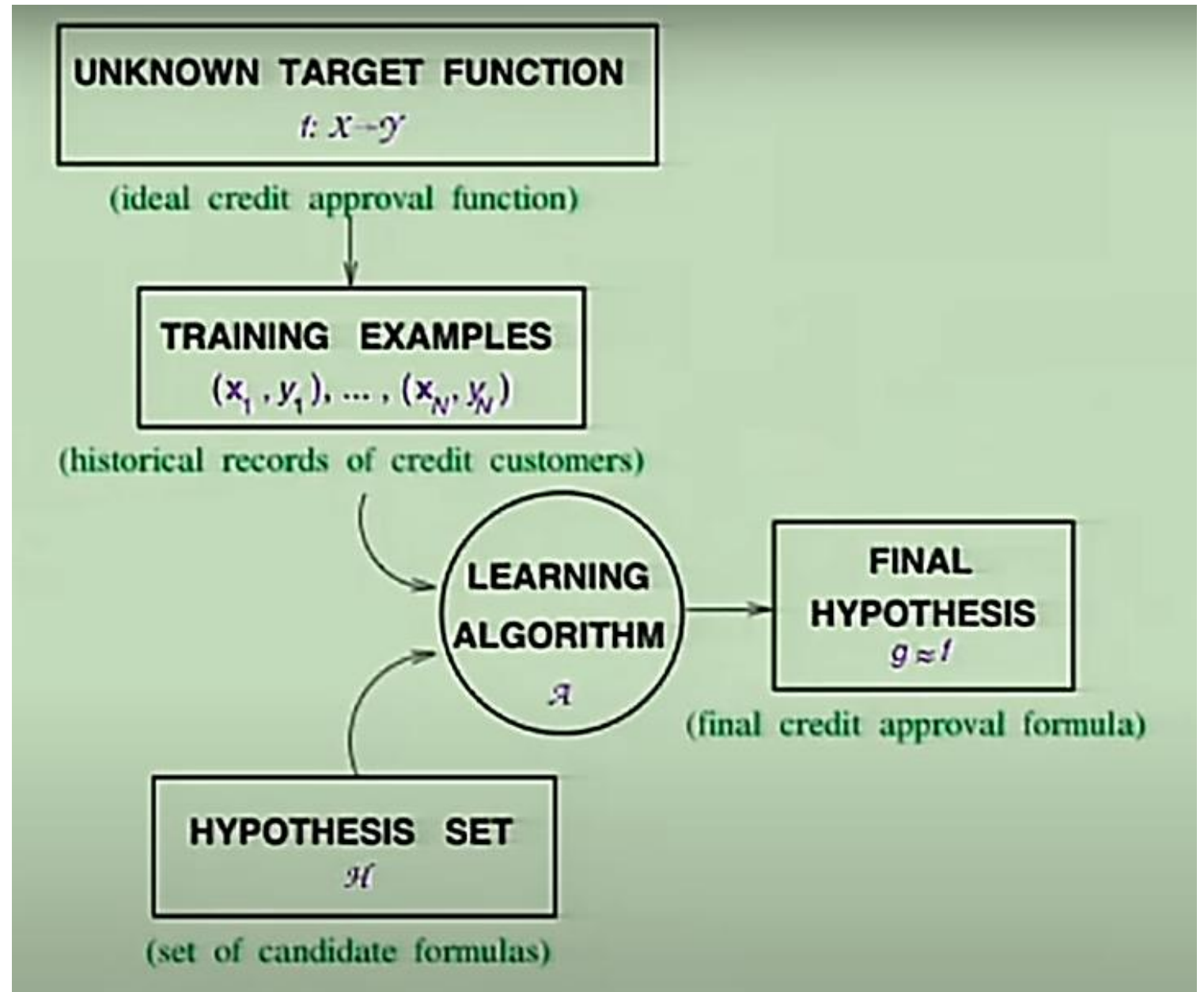
B. Tech., CSE + AI/ML

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Source: Edureka

Pattern recognition: In a Perspective

UNKNOWN TARGET FUNCTION
$t: X \to Y$

(ideal credit approval function)

TRAINING EXAMPLES
$(x_1, y_1), \ldots, (x_N, y_N)$

(historical records of credit customers)

LEARNING ALGORITHM
$\mathcal{A}$

FINAL HYPOTHESIS
$g \approx f$

(final credit approval formula)

HYPOTHESIS SET
$\mathcal{H}$

(set of candidate formulas)

Neural Networks

- What's wrong with models so far?
  - Curse of Dimensionality
- Solution: Adapt basis function approach
- Neural Networks provide such a approach
- Key concept in NNs: Fix the number of basis functions in advance but keeping them adaptive.
- Parametric basis functions with parameters are set during training.
  - Sigmoid, Gaussian
- Feed-forward Nnsor multilayer perceptrons are discussed here

Neural Networks

- Misnomer: Multilayer perceptron is not multiple layers of perceptron models but multiple layers of logistic regression models

- Advantage: Compact and fast
- Disadvantage: likelihood function is Non-convex function of model parameters (w).

Next time: Neural Networks

Thank You