

EEL 6825: Pattern Recognition

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Objectives: This class provides an introduction to classical pattern recognition. Pattern recognition is the assignment of a physical object or event to one of several prescribed categories. Materials that will be covered include: decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence. Applications will include real-world problems such as neuro-imaging, tracking of cell-growth in a population of cells, and so on. Matlab programing is required.

Course Outline by Topical Areas:

Bayesian decision theory.

Parametric estimation and supervised learning.

Linear discriminant functions.

Nonparametric methods.

Feature extraction for representation and classification.

Neural networks for pattern recognition

Text books:

Pattern Recognition, Richard Duda, Peter Hart and David G. Stork, John Wiley and Sons, 2nd edition, 2000, ISBN 0471056693.

Grading policy:

- homeworks, 30%
- Mid-term exam, 30%
- Final project, 40%