National Institute of Technology Karnataka, Surathkal

Course Plan and Evaluation Plan

Course Code	: MA722
Course Title	: Foundations of Machine Learning Algorithms
Credits	: 04
L-T-P	: 3-0-2
Course Instructor	: P. Sam Johnson (https://sam.nitk.ac.in/)
Teaching Department	: Mathematical and Computational Sciences
Objective of the course	: To introduce the students with methodologies and applications of various topics of machine learning.

Contents

Foundations of Linear Algebra and Matrix Theory, Introduction to Learning, Different learning models: Supervised, Unsupervised, reinforcement etc., Dimensionality reduction (Linear): PCA, LDA etc., Bayesian Learning: QDA, LDA, Baysian belief network, Decision tree learning, Conceptual Learning, Artificial Neural Nets, Classification, regression and clustering: SVM, Kernel SVM, Linear and Logistic regression, KNN, k-Means, Reinforcement learning.

References :

1. Ethem Alpaydin, "Introduction to Machine Learning", Fourth edition, The MIT Press, 2020.
2. Tom M. Mitchell, "Machine Learning", McGraw Hill, 1997.
3. Giuseppe Bonaccorso, "Machine Learning Algorithms", Packt Publishing, 2017.
4. Christopher M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006.

Evaluation Plan

S.No.	Exam	Weightage (%)
1	Quiz 1	10
2	Mid-Semester Exam	20
3	Quiz 2	10
4	Minor Project	10
5	End-Semester Exam	50

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