RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

CSE-Artificial Intelligence and Machine Learning/ Artificial Intelligence and Machine Learning, V-Semester

Departmental Elective AL503(C) Optimization Techniques in Machine Leaning

Course Objective: The students will be able to understand and analyze how to deal with changing data. They will also be able to identify and interpret potential unintended effects in your project. They will understand and define procedures to operationalize and maintain your applied machine learning model. Detailed Contents:

Unit I: Introduction What is optimization, Formulation of LPP, Solution of LPP: Simplex method, Basic Calculus for optimization: Limits and multivariate functions, Derivatives and linear approximations: Singlevariate functions and multivariate functions.

Unit II: Machine Learning Strategy ML readiness, Risk mitigation, Experimental mindset, Build/buy/partner, setting up a team, Understanding and communicating change.

Unit III: Responsible Machine Learning AI for good and all, Positive feedback loops and negative feedback loops, Metric design and observing behaviours, Secondary effects of optimization, Regulatoryconcerns.

Unit IV: Machine Learning in production and planning Integrating info systems, users break things, time and space complexity in production, when to retain the model? Logging ML model versioning, Knowledge transfer, Reporting performance to stakeholders.

Unit V: Care and feeding of your machine learning model MLPL Recap, Post deployment challenges, QUAM monitoring and logging, QUAM Testing, QUAM maintenance, QUAM updating, Separating Datastack from Production, Dashboard Essentials and Metrics monitoring.

 Books/Suggested References:
1. Jeeva Jose, Introduction to Machine Learning, Khanna Book Publishing 2020.
2. Rajiv Chopra, Machine Learning, Khanna Book Publishing 2021
 3. Optimization for Machine Learning, SuvritSra, Sebastian Nowozin and Stephen J. Wright, MITPress, 2011.
4. Optimization in Machine Learning and Applications, Suresh Chandra Satapathy, Anand J. Kulkarni,Springer, 2019