Value-Added Course

VAC 104: Digital and Technological Solutions

Credits: 2 (2L) **Total hrs: 30**

COURSE OBJECTIVE

- To understand the basic of Artificial Intelligence and Machine Learning
- To understand the method of Machine Learning
- To know about the implement aspects of machine learning
- To understand the concepts of Computer vision and Data Science
- To understand and implement use cases of Computer vision and Data Science

UNIT-I: **15L**

INTRODUCTION TO AI AND MACHINE LEARNING: Foundational concepts of AI - Basics of AI: (Introducing AI, ML & DL., Introduction to AI Domains (Data, CV & NLP) - Applications of AI -Ethics of AI -Introduction to Python - Python Basics -Jupyter Notebook - Introduction of Machine Learning & its types (Supervised Learning, Unsupervised Learning) -Recommendation Systems

UNIT II: **15L**

COMPUTER VISIONANDDATA SCIENCES: Neural Networks and Deep Learning - Introduction to Computer Vision - Applications of CV - Understanding CV Concepts–OpenCV -Introduction to Data Science - Applications of Data Science - Python for Data Sciences - Statistical Learning & Data Visualisation.

COURSE OUTCOMES

- Upon completion of the course, the students will be able to recognize the charactertics of AI and Machine Learning strategies
- Apply various supervised and unsupervised learning methods to appropriate problems.
- Identify and integrate more than one technique to enhance the performance learning
- Create probabilistic and computer vision models for handling unknown pattern.
- Can handle data using primary tools used for data science in Python.
- Can apply the knowledge for data describing and visualization using tools.

ThaText Books:

1. Stuart Russell (Author), Peter Norvig, Artificial Intelligence: A Modern Approach, Pearson; 3rd edition (December 1, 2009)
2. Forsyth and Ponce, “Computer Vision – A Modern Approach”, Second Edition, Prentice Hall, 2011.
3. Richard Szeliski, “Computer Vision: Algorithms and Applications”, Springer, 2011
4. David Dietrich, Barry Heller, Beibei Yang, “Data Science and Big data Analytics”, EMC 2013
5. William McKinney, Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython 2nd Edition, O'Reilly Media; 2nd edition (November 14, 2017)