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| **Department of Information Science & Engineering**  **Assignment - 3** | |
| Course Title: Artificial Intelligence and Machine Learning | Course Code: IS622T3I |
| Submission Date: 11/12/2023 | Semester: VI ‘A’ & ‘B’ |
| Faculty: Mrs. Suchetha G | Max. Marks: 10 |

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| **Q. No.** | | **Questions** | **Marks** | | | **Bloom’s**  **Level** | | **CO**  **No.** |
| **1.** | | Build a Predictive Model and perform data analysis with Machine Learning using the following algorithms. [Use different dataset for different algorithm]   1. Decision tree Algorithm 2. Artificial Neural Network 3. Naive Bayes Algorithm 4. Support Vector Machine 5. KNN | 10 | | | CL4 | | 1,2,3,4,5 |
| **Instructions to prepare the Report** | | | | | | | | |
|  | This semester you have learned about many aspects of machine learning – fundamental algorithms for classification and clustering, theoretical foundations, evaluation methodology, societal implications, etc. You will have the opportunity to craft personalized assignments that will allow you to explore topics of particular interest. Make use of a couple of tutorials to implement the machine learning projects using different algorithms.  In the following sections, we set out some ideas for projects. These are merely intended to get you thinking about the range of possibilities. By providing them here, we do not mean to imply that you must select one of them.   1. **Apply Machine Learning to a Real Data Set**   You now have a solid set of machine learning tools, so why not try them out on some real data. There are many great sources of data, including the sites below, which overlap with the set of sites I’ve identified on the course “Resources” page.   * + The UCI Machine Learning Repository [(http://](http://archive.ics.uci.edu/ml/index.php))a[rchive.ics.uci.edu/ml/index.php)](http://archive.ics.uci.edu/ml/index.php))   + Kaggle (https://[www.kaggle.com/)](http://www.kaggle.com/)) – a data science website that includes data sets, competitions, etc.   + Google data sets (https://research.google/tools/)   + Microsoft Research open data (<https://msropendata.com/>)   + Miscellaneous data made public by various institutions (such as the US Government) and companies.   **2. Explore a New Learning Algorithm:** We’ve explored classification algorithms quite extensively, but there are many more algorithms out there. For instance, you might want to learn more about clustering algorithms by implementing a hierarchical clustering algorithm. Or you might want to explore reinforcement learning by implementing Q-learning.   1. **Explore a Machine Learning Toolkit:** This is a very practical idea, but it might also allow you to explore a class of algorithms that we haven’t explored through implementation. For instance, you might choose to learn about PyTorch (https://pytorch.org/) or TensorFlow (https://[www.tensorflow.org/)](http://www.tensorflow.org/)) both of which are well suited for learning with deep networks. 2. Provide a report containing point-by-point summary of the implementation of machine learning project to reflect your efforts to complete this assignment including code and sensibly organized results. 3. Describe how this task has helped in enhancing your knowledge ofMachine Learning. | | | 10 | CL4 | | 1,2,3,  4,5 | |

**Cognitive Levels of Bloom’s Taxonomy**

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| **No.** | CL1 | CL2 | CL3 | CL4 | CL5 | CL6 |
| **Level** | Remember | Understand | Apply | Analyze | Evaluate | Create |

**Course Outcomes**

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| CO1 | Illustrate the theory of artificial intelligence for various problem-solving techniques. | CL3 |
| CO2 | Apply artificial intelligence concepts in Heuristic Search Techniques and knowledge representation. | CL3 |
| CO3 | Demonstrate the ability to evaluate concept learning tasks and decision tree algorithms to solve classification problems. | CL3 |
| CO4 | Apply the concept of neural networks for learning linear and non-linear activation functions and Bayesian classifier to label data. | CL3 |
| CO5 | Illustrate clustering, instant based and reinforcement learning algorithms and identify its applicability in real life problems. | CL3 |