Department of Master of Computer Applications
(Accredited by NBA, New Delhi)

Alternate Assessment Tool (AAT) # 1

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AAT Question or Topic or Problem Statement

Computer Price Estimation

Whenever one thinks of buying a new computer, the first thing that comes to mind is to curate a list of hardware specifications that best suits their needs. The next step is browsing different websites and looking for the cheapest option available. Performing all these processes can be time-consuming and require a lot of effort. But machine learning can help us build a system that can estimate the price of a computer system by taking into account its various features.

Download the Basic Computer Data dataset from Kaggle.

1. Analyze distributions of numerical features like cpu_usage, memory_usage, and disk_usage.
2. Explore categorical variables (os_version, processor_type) using bar charts.
3. Detect potential anomalies: Scatter plots of cpu_usage vs. memory_usage for abnormal trends.
4. Handle missing values: Impute missing numerical values (e.g., network_speed) with the median and Impute categorical values (e.g., os_version) with the mode.
5. Encode categorical variables
6. Create derived features: efficiency_ratio = cpu_usage / memory_usage and storage_utilization = disk_usage / storage_size.
7. Develop a price estimation model that can analyze historical data and identify patterns and trends in the relationship between computer specifications and prices.
8. Train a machine learning model on this data, so that the model can learn to make accurate predictions of prices for new or unseen computer components.
9. Apply Machine learning algorithms such as K-Nearest Neighbours / Decision Trees / Random Forests etc., to effectively capture complex relationships between features and prices, leading to more accurate price estimates.