**Model Development Phase Template**

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| Date | 15 July 2024 |
| Team ID | 739858 |
| Project Title | **SDSS galaxy classification using Machine Learning** |
| Maximum Marks | 5 Marks |

**Feature Selection Report Template**

Feature selection for SDSS galaxy classification: Methods compared, key features identified, their impact on model performance, and optimal feature set determined for accurate classification. Summary of findings included.

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| **Feature** | **Description** | **Selected (Yes/No)** | **Reasoning** |
| Redshift | Measure of galaxy distance | Yes | Strongly correlates with galaxy properties and classification accuracy. |
| Magnitude in u-band | Brightness in ultraviolet band | Yes | Critical for distinguishing between galaxy types. |
| Magnitude in g-band | Brightness in green band | Yes | Essential for color-based classifiation. |
| Magnitude in r-band | Brightness in red band | Yes | Important for identifying specific galaxy features. |
| Magnitude in i-band | Brightness in near-infrared band | Yes | Enhances model accuracy by providing infrared data. |
| Magnitude in z-band | Brightness in further infrared band | Yes | Complements other magnitudes for better classification. |
| Spectral Line Indices | Measurements of spectral features | Yes | Key indicators of galaxy composition and age. |
| Position(RA,Dec) | Right ascension and delination | No | Minimal impact on classification as it is spatial data. |
| Petrosian Radius | Radius containing a set fraction of light | No | Redundant with other shape/size features. |
| Concentration Index | Ratio of light concentration | Yes | Helps distinguish between galaxy types based on light distribution. |
| Surface Brightness | Average brightness per unit area | Yes | Important for understanding galaxy structure. |
| Galaxy Type | Predefined galaxy classification | No | Used as the targer variable,not a feature. |