**Project Initialization and Planning Phase**

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| Date | 15 July 2024 |
| Team ID | 739748 |
| Project Title | Genetic Classification Of An Individual By Using Machine Learning |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

Genetic classification involves categorizing individuals based on their genetic makeup. This classification can be used for various purposes, including medical diagnostics, ancestry tracking, and personalized medicine. Machine learning (ML) offers a powerful set of tools for analyzing large datasets and identifying patterns that are not easily discernible through traditional statistical methods. By applying ML to genetic data, we can automate and enhance the classification process, leading to more accurate and efficient outcomes.

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| **Project Overview** | |
| Objective | Develop a machine learning model to classify individuals based on genetic data, enhancing accuracy and efficiency in genetic classification. |
| Scope | Data collection and preprocessing   Feature extraction   Model development and training   Validation, testing, and deployment   Documentation and results presentation |
| **Problem Statement** | |
| Description | Current genetic classification methods are manual and error-prone. An automated ML model can improve speed and accuracy |
| Impact | Facilitates personalized medicine, aids genetic research, reduces manual workload for geneticists. |
| **Proposed Solution** | |
| Approach | Collect and preprocess genetic data.  Extract relevant genetic markers.  Develop and train ML model (Random Forest)  Validate and test models.  Deploy the best-performing model.  Monitor and evaluate performance. |
| Key Features | Automated classification  High accuracy  Scalability  User-friendly interface |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | e.g., 2 x NVIDIA V100 GPUs |
| Memory | RAM specifications | e.g., 8 GB |
| Storage | Disk space for data, models, and logs | e.g., 1 TB SSD |
| **Software** | | |
| Frameworks | Python frameworks | e.g., Flask |
| Libraries | Additional libraries | e.g., scikit-learn, pandas, numpy |
| Development Environment | IDE, version control | e.g., Anaconda prompt, Jupyter Notebook, Git |
| **Data** | | |
| Data | Source, size, format | e.g., Kaggle dataset, 10,000 images |