**Project Planning Phase**

**Project Planning (Product Backlog, Sprint Planning, Stories, Story points)**

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| --- | --- |
| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID35892 |
| Project Name | Enhanced Wings: Marvels of Butterfly Species |
| Maximum Marks | 5 Marks |

**Product Backlog, Sprint Schedule, and Estimation (4 Marks)**

Use the below template to create product backlog and sprint schedule

| **Sprint** | **Functional Requirement (Epic)** | **User Story Number** | **User Story / Task** | **Story Points** | **Priority** | **Team Members** |
| --- | --- | --- | --- | --- | --- | --- |
| Sprint-1 | Data Collection & Preprocessing | USN-1 | |  | | --- | |  |  |  | | --- | | As a developer, I can collect butterfly image dataset from sources like Kaggle and BioTrove. | | 2 | High | 1 |
| Sprint-1 |  | USN-2 | As a developer, I can load and explore the dataset to understand its structure and image quality. | 1 | High | 2 |
| Sprint-1 |  | USN-3 | As a developer, I can apply image preprocessing like resizing, normalization, and augmentation. | 3 | Medium | 3 |
| Sprint-1 |  | USN-4 | As a developer, I can label images and prepare them for model training. | 2 | Medium | 4 |
| Sprint-2 | Model Building & Evaluation | USN-5 | As a developer, I can train a CNN model (e.g., ResNet) to classify butterfly species. | 5 | High | 1 |
| Sprint-2 |  | UNS-6 | As a developer, I can evaluate the trained model using accuracy, F1-score, and confusion matrix. | 1 | High | 2 |
| Sprint-2 | Web Interface & Deployment | UNS-7 | As a developer, I can create a responsive HTML/CSS/JS interface to upload images and display results. | 3 | Medium | 3 |
| Sprint-2 |  | UNS-8 | As a developer, I can deploy the model using a Flask API to return species predictions and confidence level. | 5 | High | 3 |

**Project Tracker, Velocity & Burndown Chart: (4 Marks)**

| **Sprint** | **Total Story Points** | **Duration** | **Sprint Start Date** | **Sprint End Date (Planned)** | **Story Points Completed (as on Planned End Date)** | **Sprint Release Date (Actual)** |
| --- | --- | --- | --- | --- | --- | --- |
| Sprint-1 | 8 | 5 Days | 31 Apr 2022 | 05 May 2025 | 8 | 20 May 2025 |
| Sprint-2 | 16 | 5 Days | 31 Apr 2025 | 05 May 2025 | 16 |  |
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**Velocity Calculation**

* **Total Story Points: 8 (Sprint-1) + 16 (Sprint-2) = 24**
* **Total Number of Sprints: 2**
* **Team Velocity = 24 ÷ 2 = 12 Story Points/Sprint**
* **Average Velocity per Day = 12 ÷ 5 = 2.4 Story Points/Day**

**Burndown Chart:**

A burndown chart shows the work remaining (story points) versus time during a sprint. It helps track progress by comparing planned progress with actual work completed. In this project, it visually reflects how quickly tasks for **Enhanced Wings: Marvels of Butterfly Species** are being completed across sprints.

**References:**

* **Sciencedirect** – *Butterfly detection and classification techniques: A review*  
  <https://www.sciencedirect.com/science/article/pii/S266730532300039X>
* **MDPI Electronics** – *A Novel Method for the Classification of Butterfly Species Using Transfer Learning*  
  https://www.mdpi.com/2079-9292/11/13/2016
* **Kaggle Dataset** – *Butterfly Image Classification Dataset*  
  https://www.kaggle.com/datasets/phucthaiv02/butterfly-image-classification
* **ResearchGate** – *Automatic Identification of Butterfly Species Using Deep Learning*  
  <https://www.researchgate.net/publication/370959457>
* **NCBI PMC** – *Fine-Grained Butterfly Recognition via Peer Learning Network*  
  <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9598112>