

Project Design Phase-II
Technology Stack (Architecture & Stack)

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID59414 |
| Project Name | Smart Sorting: Transfer learning for rotten fruits and vegetables |
| Maximum Marks | 4 Marks |

Technical Architecture:

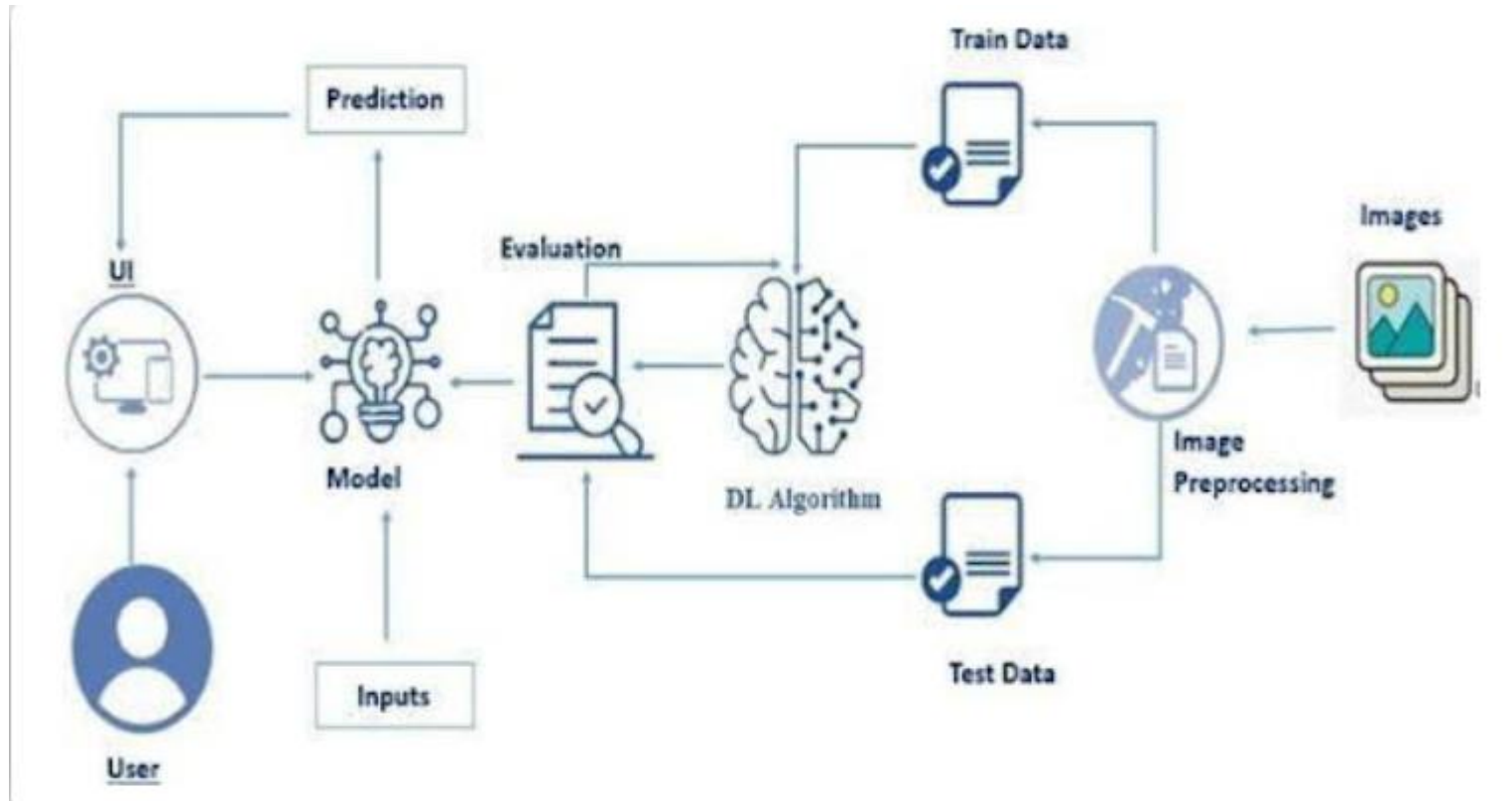


Table-1: Components & Technologies:

| S.No | Component | Description | Technology |
|------|-------------------------|---|---------------------------------------|
| 1. | User Interface | Web based interface for image upload and result display | HTML, CSS, Java script |
| 2. | Application Logic-1 | Web application framework and routing | Flask (Python) |
| 3. | Application Logic-2 | Image preprocessing and validation | PIL, OpenCV, Numpy |
| 4. | Machine learning model | Transfer learning model for classification | VGG16 (tensorflow/Keras) |
| 5. | Model storage | Trained model persistence | H5 format (healthy_vs_rotten.h5) |
| 6. | Development environment | Model development and experimentation | Jupyter Notebook, VS Code, Python 3.x |
| 7. | Version control | Code repository and collaboration | Git, GitHub |

Table-2: Application Characteristics:

| S.No | Characteristics | Description | Technology |
|------|------------------------------|--|--|
| 1. | Open-Source Frameworks | Deep learning and web frameworks | Tensorflow, Keras, Flask |
| 2. | Transfer Learning | Pre-trained model utilization for faster development | VGG16 ImageNet weights |
| 3. | Scalable Architecture | Web-based architecture supporting multiple users | Flask WSGI, RESTFul design |
| 4. | Performance optimization | Efficient Image processing and model inference | Numpy vectorization, optimized preprocessing |
| 5. | Cross platform compatibility | Browser-based access from any device | Responsive web design |

