**SOFTWARE DISCLOSURE FORM**

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| new logo | **JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND**  **TECHNOLOGY** | | |
| **Document: Form** | | **Ref No: F-III-1-2** |
| **Title: AI-POWERED TOMATO DISEASE DETECTION APP** | | |
| **Issue No: 1** | **Revision No: 0** | **Date:06-03-2025** |

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| **Date received** | **Disclosure No.**  ***(Assigned by DIPUIL)*** |

**Title of Software: AI-POWERED TOMATO DISEASE DETECTION APP**

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| **SOFTWARE INFORMATION** | | | | |
| **Category of software:**  Computer ☑ Mobile □ Databases □ Others …………………. | | | | |
| **Abstract/Brief description of software:** This software utilizes artificial intelligence and computer vision techniques to identify and diagnose tomato plant diseases from images. By leveraging deep learning models, the system analyzes leaf images and provides accurate predictions of potential diseases, enabling farmers and agricultural specialists to take timely action. | | | | |
| **Novelty:**   1. list the novel and unique features of the Software: 2. **AI-Powered Disease Detection:** Uses deep learning models to accurately diagnose tomato plant diseases. 3. **Mobile-Based Solution:** Provides a user-friendly mobile application for farmers and agricultural experts. 4. **Offline Mode:** Allows users to access the application and make disease predictions even in areas with poor internet connectivity. 5. **Disease Management Recommendations:** Offers actionable insights and tailored recommendations to help farmers manage detected diseases effectively. 6. **Cloud-Based Processing:** Utilizes cloud computing for real-time image analysis, ensuring efficient and fast disease detection. 7. **Multi-Language Support:** Enables users from different regions to access the application in their preferred language, increasing accessibility. 8. describe the Software in detail *(Consider the commercial applications of the technology and how they might be applied to a product, process or service. Importantly, please describe what aspects of the inventions have been proven experimentally and what is shown by the data. Also describe what materials or prototypes have been created in relation to the invention. Attach any technical documents of Invention including (submitted or draft) manuscripts, posters, theses and grant applications.)*   **SHAMBAXPERT PROJECT WRITE UP.**  **Problem Statement and Motivation.**  Tomato crops are highly vulnerable to various diseases that can significantly impact yield and quality. Farmers often rely on visual inspection and experience to diagnose plant health issues, which is prone to errors and delays. This software aims to bridge the gap between traditional farming and modern technology by providing an AI-driven solution that ensures accurate and timely disease detection, ultimately reducing losses and improving food security.  **SOLUTION ARCHITECTURE.**  The AI-Powered Tomato Disease Detection System is composed of the following key components:  **User Interface:** A mobile application built using Flutter that allows users to capture or upload images of tomato leaves.  **Backend (API Layer):** Implemented using Django REST Framework (DRF), serving as the intermediary between the mobile application and the AI model.  **AI Processing Module:** Uses the Gemini SDK to send images to the Gemini AI model for disease detection. The backend processes these results and sends them back to the mobile application.  **Result Interpretation and Recommendations:** The system provides disease predictions along with actionable recommendations for treatment and prevention.  **PROGRAMING LANGUAGES AND TECHNOLOGIES USED.**  Python (Django REST Framework, Gemini SDK)  Flutter (for mobile application)  React(for project’s website)  **SOLUTION ARCHITECTURE EVALUATION.**  To demonstrate the system's core functionality, consider the following scenario:  **User Interaction:** A farmer captures an image of a diseased tomato leaf using the mobile application.  **API Request:** The image is sent via the Flutter app to the Django REST API.  **AI Processing:** The Django backend forwards the image to the Gemini SDK, which processes it using Google's AI model.  **Disease Identification:** The Gemini AI model analyzes the image and returns a diagnosis, including confidence scores.  **Response & Recommendations:** The Django API processes the result and sends it back to the mobile app, providing the farmer with the identified disease and treatment recommendations.  This example highlights how the system efficiently handles disease detection while leveraging cloud-based AI before transitioning to a fully trained in-house model.  PROJECT CODE LINKS.  Portfolio website repo:  Mobile GitHub repo:  Backend GitHub repo: | | | | |
| **Stage of development:** Tick where appropriate  Concept ☑ Prototype □ Pilot/Beta test □ Ready to license | | | | |
| **Keywords:** (*Provide at least five keywords that accurately describe the scope of the Software)* | | | |
| **State of software documentation:** Tick where appropriate  None ☑ Partial □ Full | | | |
| **Market place for the Mobile App:** Tick where appropriate  ☑ Apple App Store ☑ Google Play □ Microsoft Store □ Others | | | |
| **Indicate the kind of the license you plan to use for release of the Software**  □ Academic □ Evaluation □ End User ☑ Open Source Commercial | | | |
| **State the format in which the software will be made available**  □ Source □ Executable □ Object  Others | | | |
| **SOFTWARE DEVELOPMENT** | | | |
| History of the Software | | | |
| **Event** | | **Date** | **Comment** |
| When was it first conceived? | | 2/02/2025 |  |
| When was it first created? | | 20/02/2025 |  |
| When was it first published? | | 27/02/2025 |  |
| **Third Party Code and Materials** | | | |
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| List disclosures, publications, or disseminations of any aspect of the Software. | | | |
| **Description/Type** | **Date (or Expected Date)** | | **Comments** |
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