**INPUT DESIGN AND OUTPUT DESIGN**

**INPUT DESIGN**

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

* What data should be given as input?
* How the data should be arranged or coded?
* The dialog to guide the operating personnel in providing input.
* Methods for preparing input validations and steps to follow when error occur.

**OBJECTIVES**

1. Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system.

2. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

3. When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow.

Input design for the Automated Vehicle Damage Localization and Severity Estimation System focuses on how users will interact with the system and provide the necessary data for damage detection and severity estimation. The input design will include user interfaces, data formats, and any specifications for different modes of input. Here’s a detailed overview:

**1. User Interface Components**

**a. Main Dashboard**

**Description:** The central hub where users can navigate to different functionalities of the system.

**Features:**

* Navigation Menu: Links to image-based, video-based, and webcam-based predictions.
* Upload Section: A dedicated area for users to upload images or videos.

**b. Image Upload Interface**

**Description:** A simple and intuitive interface for uploading images for analysis.

**Features:**

* File Upload Button: Users can select images from their devices (supporting common formats like JPEG).
* Drag-and-Drop Area: Users can drag images into a designated area for easy uploads.
* Preview Thumbnail: Display a thumbnail of the uploaded image for user confirmation.
* Submit Button: Initiates the analysis process.

**c. Video Upload Interface**

**Description:** Allows users to upload videos for damage analysis.

**Features:**

* File Upload Button: Support for common video formats such as MP4.
* Preview Feature: Option to play a short clip to ensure the correct video is uploaded.
* Submit Button: Begins processing the video for damage detection.

**d. Webcam Capture Interface**

**Description:** Provides functionality for users to analyze vehicles in real-time using their device's webcam.

**Features:**

* Camera Access Prompt: Requests permission to access the webcam.
* Live Feed Window: Displays the live video feed from the webcam.
* Start Analysis Button: Initiates real-time processing of the captured feed.

**2. Data Formats**

a. Image Data

* Format: JPEG

**Specifications:**

* Minimum resolution: 640x480 pixels
* Recommended resolution: 1920x1080 pixels or higher for better accuracy

**b. Video Data**

**Format:** MP4

**Specifications:**

Minimum frame rate: 15 frames per second

Maximum duration: 5 minutes (to ensure processing efficiency)

**3. Input Validation**

**a. Image Upload Validation**

* Check for File Type: Ensure uploaded files are in the correct format (JPEG).
* Check for File Size: Limit the maximum file size (e.g., 2 MB) to ensure efficient processing.
* Check for Dimensions: Ensure images meet the minimum resolution requirement.

**b. Video Upload Validation**

* Check for File Type: Validate that uploaded files are in supported video formats (MP4).
* Check for File Size: Limit video size (e.g., 5 MB) to facilitate smoother processing.
* Check Duration: Ensure the video duration does not exceed the maximum limit.

**4. User Input Feedback**

* Loading Indicators: Display progress indicators while images or videos are being processed to inform users about the status.
* Success/Failure Messages: Provide clear feedback after processing, indicating whether the analysis was successful or if there were errors (e.g., unsupported formats, upload errors).
* Results Display: Once processing is complete, present the results in a clear and concise manner, showing detected damages and severity estimates.

**5. Accessibility Features**

* Responsive Design: Ensure the interface is mobile-friendly and adapts to various screen sizes.
* Alt Text for Images: Use alt text descriptions for all graphical elements to support users with visual impairments.
* Keyboard Navigation: Allow users to navigate through the interface using keyboard shortcuts for improved accessibility.

By incorporating these input design elements, the Automated Vehicle Damage Localization and Severity Estimation System will provide a user-friendly, efficient, and effective platform for accurately assessing vehicle damages.

**OUTPUT DESIGN**

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system’s relationship to help user decision-making.

1. Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will find the system can use easily and effectively. When analysis design computer output, they should Identify the specific output that is needed to meet the requirements.

2. Select methods for presenting information.

3. Create document, report, or other formats that contain information produced by the system.

The output form of an information system should accomplish one or more of the following objectives.

* Convey information about past activities, current status or projections of the
* Future.
* Signal important events, opportunities, problems, or warnings.
* Trigger an action.
* Confirm an action.