Project Report- Python

BCA (Guru Gobind Singh Indraprastha University)

HAND GESTURE BASED MEDIA PLAYER

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Computer Applications

To

Guru Gobind Singh Indraprastha University, Delhi

Guide:
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06690302019

Submitted by:
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Nurturing Excellence

Institute of Innovation In Technology & Management,
New Delhi – 110058
Batch (2019-2022)

Certificate

We, 1. Ishika Gupta- 06690302019 & 2. Tanuj Kalra- 04890302019 certify that the Summer Training Project Report (BCA-355) entitled "Hand Gesture Based Media Player" is done by us and it is an authentic work carried out by us at INSTITUTE OF INNOVATION IN TECHNOLOGY AND MANAGEMENT. The matter embodied in this project work has not been submitted earlier for the award of any degree or diploma to the best of my knowledge and belief.

1. Signature of the Student

2. Signature of the Student

Date:

Certified that the Project Report (BCA-355) entitled "Hand Gesture Based Media Player" done by the above students is completed under my guidance.

Signature of the Guide
Date:
Name of the Guide:
Designation:

Countersigned

Director

ACKNOWLEDGEMENT

*I would like to express my special thanks of gratitude to my teacher -**Mr. Lokesh Jain** as well as our Institute - **INSTITUTE OF INNOVATION IN TECHNOLOGY AND MANAGEMENT** who gave me the golden opportunity to do this wonderful project on the topic "**HAND GESTURE BASED MEDIA PLAYER**" which also helped me in doing a lot of Research and I came to know about so many new things I am really thankful to them.*

Secondly, I would also like to thank my Partner in this project – who helped me a lot in finalizing this project within the limited time frame.

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PROJECT PROPOSAL (SYNOPSIS)

(1) Title of the Project.: Hand Gesture Based Media Player

(2) Introduction and Objectives of the Project.

INTRODUCTION to I.T:
(Intelligent Tech)

- The Hand gesture based media player is known to be a pilot project that is designed for the Elite peoples to show and let them enjoy the power of tech without touching any key or click.
- The software is designed to handle the functionality of media player used on a daily base or we can say to handle the media activity watched by the person with the advance tech controls of gesture.
- It makes the people to enjoy and provide a lifestyle of extra comfort with its gesture features.
- The software application is designed in such a manner that it will make you a feel of pleasure with its future Tech's controls.

(3) Project Category: Artificial Intelligence, Deep learning

(4) Tools / Platform, Hardware and Software Requirement specifications.

Requirement analysis for user

- System with web camera
- Os =Windows XP,7,8,10
- Ram = 4 GB
- Hardisk space required 100 mb

Requirement analysis for programming

- Os =Windows 10
- Software = Pycharm /Anaconda
- Web cam
- RAM = 4 GB
- HDD Space= 1 GB

(5) Are you doing this project for any Industry/college?

Yes

(6) Name and Address of the Industry or Client.

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(7) Future scope and further enhancement of the project. Also mention limitation of the project.

Existing system & its problems

- As we all know in today's life we all use media player to play Videos, songs etc but we have to start or stop that thing by touching our screens or clicking mouse. And sometimes it is irritable too, like we want to stop the movie or song but sometimes touch doesn't work.

- So how it would be if we able to pause, play, fast-forward or slow-mode by just hand gestures or by just moving your hands.

(8) Name of your guide

Mr. Lokesh Jain

(9) Date of submission

Chapter 1

Systems Introduction

1.1 Brief Description of the System under Study: The Hand gesture based media player is known to be a pilot project that is designed for the Elite peoples to show and let them enjoy the power of tech without touching any key or click.

The software is designed to handle the functionality of media player used on a daily base or we can say to handle the media activity watched by the person with the advance tech controls of gesture.

1.2 About the proposed System: As we all know in today's life we all use media player to play Videos, songs etc but we have to start or stop that thing by touching our screens or clicking mouse. And sometimes it is irritable too, like we want to stop the movie or song but sometimes touch doesn't work.

So how it would be if we able to pause, play, fast-forward or slow-down can be done by just hand gestures or by just moving our hands.

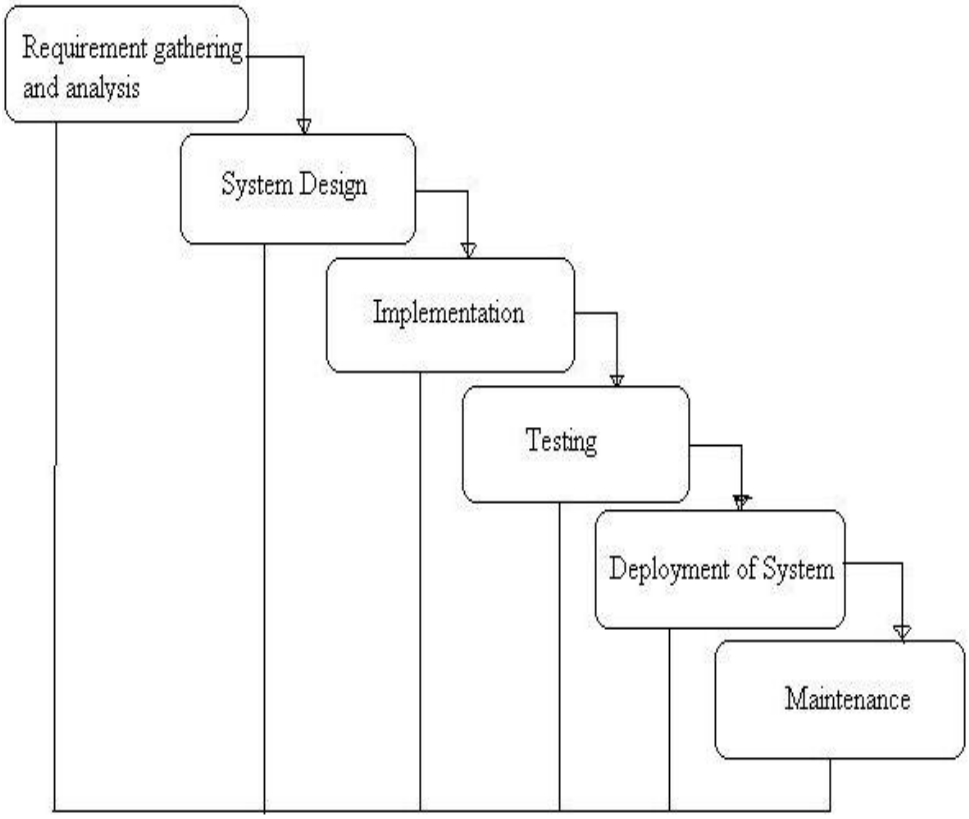
This approach makes the people to enjoy and provide a lifestyle of extra comfort with its gesture features.

The software application is designed in such a manner that it will make you a feel of pleasure with its future Tech's controls.

1.3 Methodology used for Analysis, Design & Development:

Water fall software MODEL is USED IN MAKING OF I.T

- The water fall model is a representation of linear sequential design approach for software development in the flow of progress id downward and in one direction only . the concept of waterfall diagram is based on waterfall. initiation, analysis, design, construction, testing, deployment and testing all are the parts of waterfall diagram.
- The waterfall diagram basically gives us an idea of how the software which we are designing is going to look like and what are the key elements of the software on which we need to think and work first.



The sequential phases in Waterfall model:

- Requirement and gathering analysis – The first step of starting the waterfall diagram is to gather information on which the team has to work and perform the task . the gathering of information and analyzing it makes it easier to decide the the system to be developed are being captured in this phase and it also requires a proper documentation for the same.
- System design- In the first phase we discussed the need of documentation and gathering information and the next step is to design a system so that any user can access this and dose not differentiate between any platform like (ios, windows, android etc) This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.
- Implementation – Then comes the next step is to give the software a shape that it needs and the team will help this in acquiring the shape as the design the front and backend of the software and let it run so that they can find out any error in the design .The team first starts with developing small program called units and then they convert these small units into a whole program . the team test each unit which is known as unit testing.

- Integration and testing – The crucial step after each phase Is testing so the team test the whole program and they first start with testing the units then they come to whole program and check any faults in the program.
- Deployment of system – The last thing that remains after conducting the test is to deploy the program and make it available to all kind of user and not giving privilege to specific user. the team focuses every focuses on every part of society and then deploy the program to each platform.
- Maintenance – The next task after deploying the program is to maintain the program so that no error could generate when the user is working over the program . the measures taken to maintain the program is by updating them so that at last it would give any error.

APPLICATIONS OF WATER FALL MODEL:

1. It requires well defined documentation so that no other can copy our program .
2. The definition of program must be understandable by layman and he would face no difficulty in that.
3. The technology used must be clear enough to be understood by the user
4. The program does not require any specific system requirement I.e it must be able to run in low end platforms
5. The resources required to make the program must be less expensive so that the company can afford it.
6. The project must not be long so that it could be completed in time

ADVANTAGES OF WATERFALL MODEL:

1. The program is easy to use that is its user friendly.
2. The program is easy to maintain and requires less maintanence cost.
3. The program is easy to diagnose if any error occurs .
4. The program is available to all kind of user
5. The program is understandable to layman
6. The cost of making program is minimized.

DISADVANTAGES OF WATERFALL MODEL:

1. This is not suitable for the long term projects.
2. This model is not suitable for the project which require huge cost of building.
3. This project is also not suitable in dynamic environment and the environment where changes are done quickly.
4. The maintain is costly and difficult.
5. The user cannot be able to understand the program.

1.4 Methodology used for Data Collection: Data collection is defined as the procedure of collecting, measuring and analyzing accurate insights for research using standard validated techniques. A researcher can evaluate their hypothesis on the basis of collected data. In most cases, data collection is the primary and most important step for research, irrespective of the field of research. The approach of data collection is different for different fields of study, depending on the required information.

The most critical objective of data collection is ensuring that information-rich and reliable data is collected for statistical analysis so that data-driven decisions can be made for research.

1.5 System Requirement Tools:

Requirement analysis for user

- System with web camera
- Os =Windows XP,7,8,10
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Requirement analysis for programming

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Chapter 2

System Analysis

Software Requirement Specifications – A software requirements specification is a description of a software system to be developed. It is modelled after business requirements specification, also known as a stakeholder requirements specification. It describes the intended purpose, requirements, and nature of a software to be developed. It also includes the yield and cost of the software.

2.1 Introduction

The following subsections of Software Requirement Specifications Document should facilitate in providing the entire overview of the Information system "Hand Gesture based Media Player" under development. This document aims at defining the overall software requirements for end users. Efforts have been made to define the requirements of the Information system exhaustively and accurately.

2.1.1 Purpose

The main purpose of Software Requirement Specifications Document is to describe in a precise manner all the capabilities that will be provided by the Software Application "Hand Gesture based Media Player". It also states the various constraints which the system will be abide to. This document further leads to clear vision of the software requirements, specifications and capabilities. These are to be exposed to the development, testing team and end users of the software

2.1.2 Scope – Advanced VLC hand gestures

2.1.3 References-

- Google
- Mr. Lokesh Jain Sir

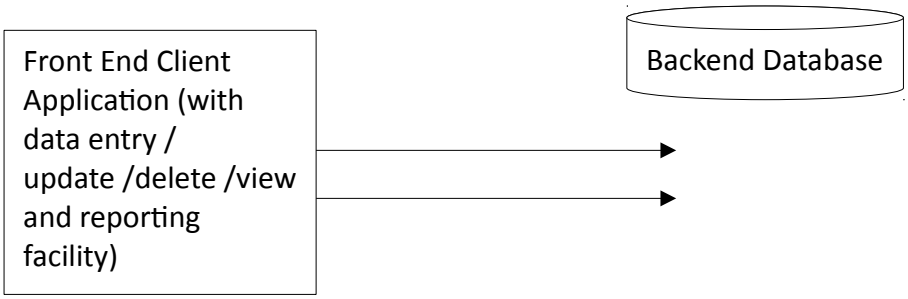
2.1.4 Overview

The rest of this SRS document describes the various system requirements, interfaces, features and functionality in detail.

2.2 Overall description of proposed system

2.2.1 Product Perspective

The application will be windows-based, self contained and independent software product.



2.2.1.1 System Interfaces

Windows 10

2.2.1.2 Interfaces

The application will have a user friendly and menu based interface. Following screens will be provided:

1. Main Camera
2. Threshold
3. Media Player
4. Color HSV adjuster

2.2.1.3 Hardware Interfaces

- HD Camera

2.2.1.4 Software Interfaces

- VLC Media Player

2.2.1.5 Communication Interfaces

- Python

2.2.1.6 Memory Constraints

- Threshold

2.2.1.7 Operations

- This product will work upon play/pause/fast-forward/slow-motion schema in the project..

2.2.1.8 Site Adaptation Requirement

- The terminals at client side will have to support the hardware and software interfaces specified.

2.2.2 Product functions

The system will allow access only to authorized users with specific roles (Administrator, Operator). Depending upon the user's role, he/she will be able to access only specific modules of the system.

2.2.3 User Characteristics

1. Educational Level: At least graduate and should be comfortable with English language.

2. Technical Expertise: Should be a high or middle level employee of the organization comfortable with using general purpose applications on a computer

2.2.4 Constraints

- None

2.2.5 Assumptions and Dependencies –

- HD Camera
- Plain background(light color)

2.3 Specific Requirements

This section contains the software requirements to a level of detail sufficient to enable designers to design the system, and testers to test the system.

2.3.1 External Interfaces

2.3.1.1 User Interfaces

The following screens will be provided:

2.3.1.2 Hardware Interfaces

- 4 GB RAM
- 1 TB Hard-Disk

2.3.1.3 Software interfaces

- VLC Media Player
- Python Module

2.3.1.4 Communication Interfaces

- Python Interpretater

2.3.2 System Features

- Play
- Pause
- Fast-forward
- Slow-motion

Description

- ❑ As we all know in today's life we all use media player to play Videos, songs etc but we have to start or stop that thing by touching our screens or clicking mouse. And sometimes it is irritable too, like we want to stop the movie or song but sometimes touch doesn't work.

- ❑ So how it would be if we able to pause, play, fast-forward or slow-mode by just hand gestures or by just moving your hands.

- ❑ This module works on reducing our problem of clicking the mouse again and again for all the basic media player functions.

Error Handling / Response to abnormal situations

2.3.3 Performance Requirements

- Clear Background

2.3.4 Design Constraints

2.3.4.1 Standard Compliance

- None

2.3.5 Software System Attributes

Reliability

This application is a reliable product that produces fast and verified output of all its processes.

Availability

This application will be available to use for end users and help them to carry out their operations conveniently.

Security

The application will be password protected. User will have to enter correct username, password and role in order to access the application.

Maintainability

The application will be designed in a maintainable manner. It will be easy to to incorporate new requirements in the individual modules.

Portability

The application will be easily portable on any windows-based system that has oracle installed.

3. Methodologies for Data Collection:

3.1 Primary Data Collection:

Primary data collection is the process of gathering data through surveys, interviews, or experiments.

Primary data collection methods can be divided into two groups: quantitative and qualitative.

Quantitative data collection methods are based in mathematical calculations in various formats. Methods of quantitative data collection and analysis include questionnaires with closed-ended questions, methods of correlation and regression, mean, mode and median and others

Qualitative research methods, on the contrary, do not involve numbers or mathematical calculations. Qualitative research is closely associated with words, sounds, feeling, emotions, colors and other elements that are non-quantifiable.

3.2 Secondary Data Collection:

Secondary data is a type of data that has already been published in books, newspapers, magazines, journals, online portals etc. There is an abundance of data available in these sources about your research area in business studies, almost regardless of the nature of the research area. Therefore, application of appropriate set of criteria to select secondary data to be used in the study plays an important role in terms of increasing the levels of research validity and reliability.

These criteria include, but not limited to date of publication, credential of the author, reliability of the source, quality of discussions, depth of analyses, the extent of contribution of the text to the development of the research area etc.

In this project, we have used both primary sources and secondary data collection.

Chapter 3

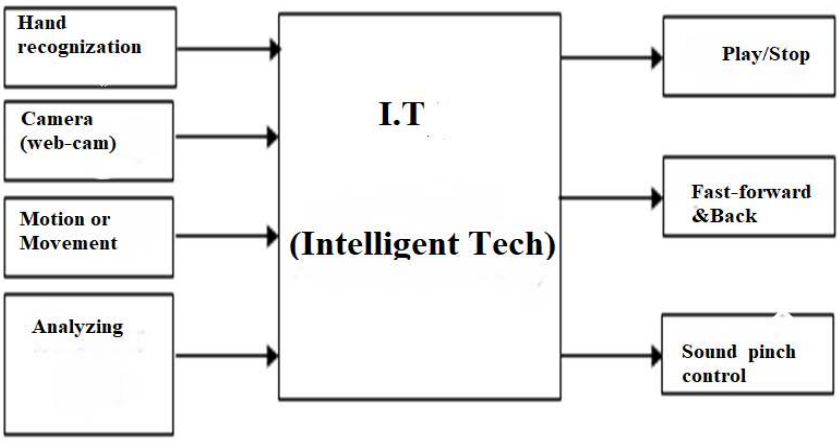
System Design

1. Physical Design- Hand Gesture Based Media Player

Block Diagram-

A block diagram is a diagram of a system in which the principal parts or functions are represented by blocks connected by lines that show the relationships of the blocks.

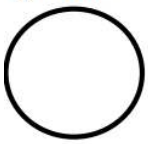
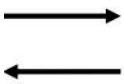
The basic element of a Block diagram is a block. The summing point and the take-off point.



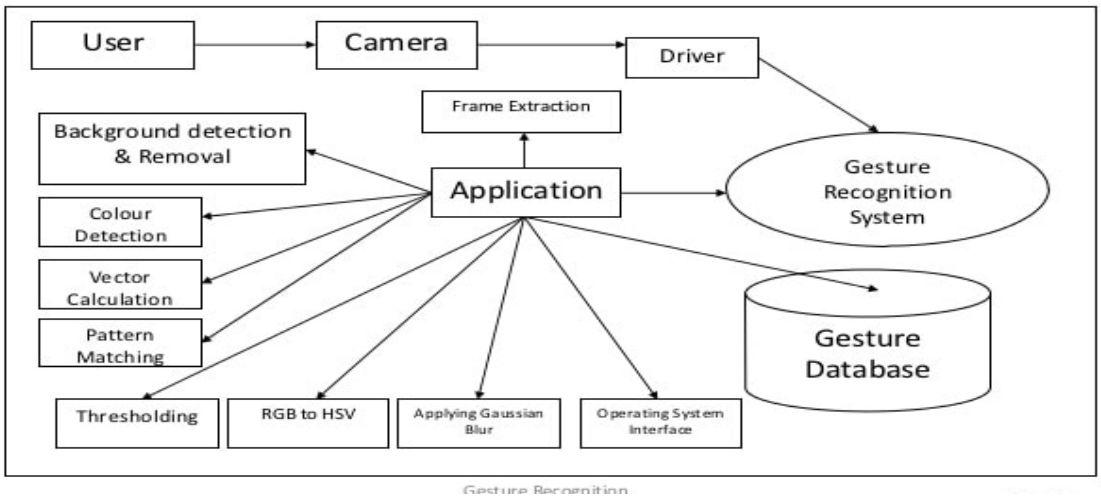
2. DFD

A level 0 data flow diagram (DFD), also known as a context diagram, shows a data system as a whole and emphasizes the way it interacts with external entities.

Notations used in DFD

Symbols	Meanings
	It represents a process that transforms incoming data to outgoing data.
	It represents a data-item or collection of data-item. The arrow indicates direction of Data-flow.

Data Flow Diagram



3. ER Diagram

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database.

ER diagram is used to :-
Identify the data that must be captured, stored and retrieved in order to support the business activities performed by an organization and identify the data required to derive and report on the performance measures that an organization should be monitoring.
Entity relationship diagrams have three different components:

- ENTITIES
- ATTRIBUTES
- RELATIONSHIPS

Entity: - An entity may be defined as a thing which is recognized as being capable of an independent existence and which can be uniquely identified. An entity is an abstraction from the complexities of some domain.
Relationship: - A relationship captures how two or more entities are related to one another.
There are potentially three types of relationship which can exist between two different entities:

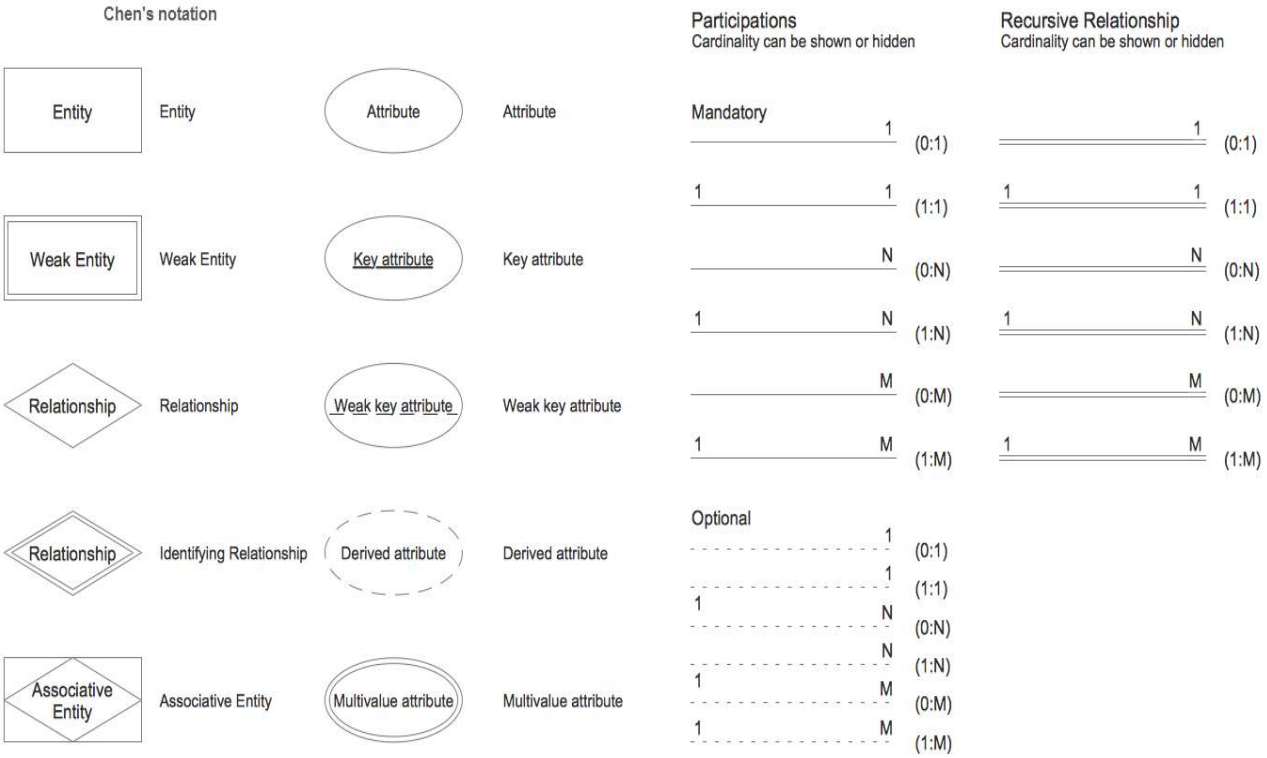
ER diagram is used to :-

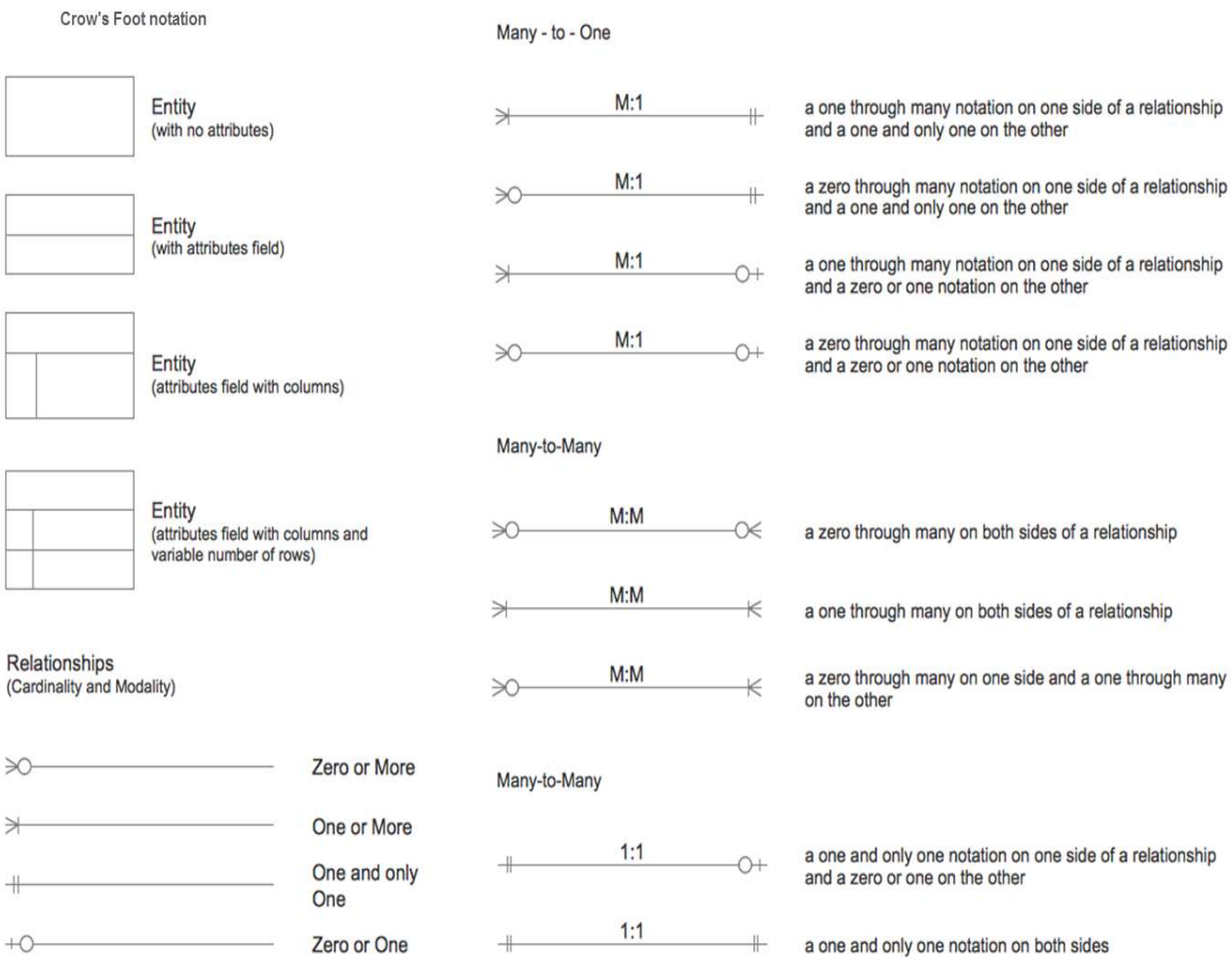
a. One-to-One Relationships

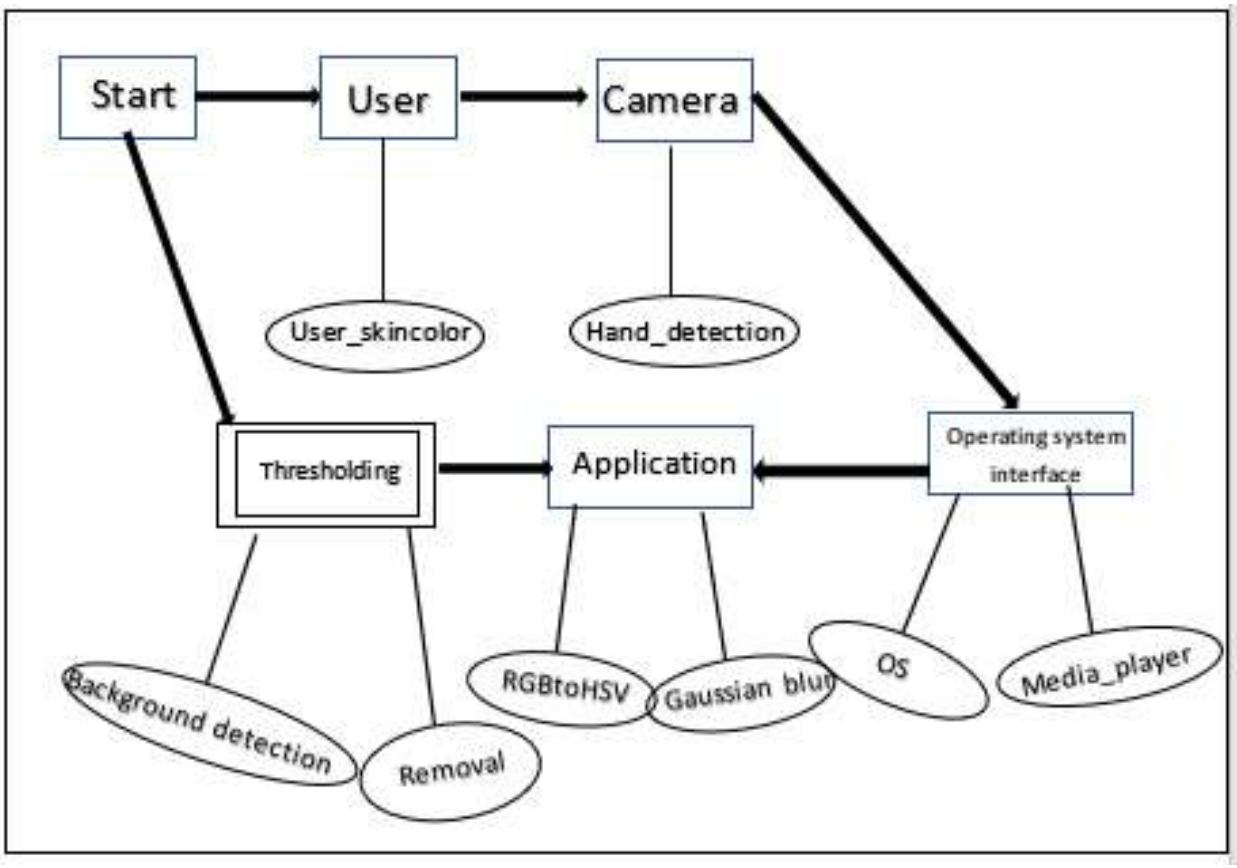
b. One-to-Many Relationships

c. Many-to-Many Relationships

Attributes: - Entities are further described by their attributes (sometimes called data elements). These are the smallest units of data that can be described in a meaningful







3. Interface Design

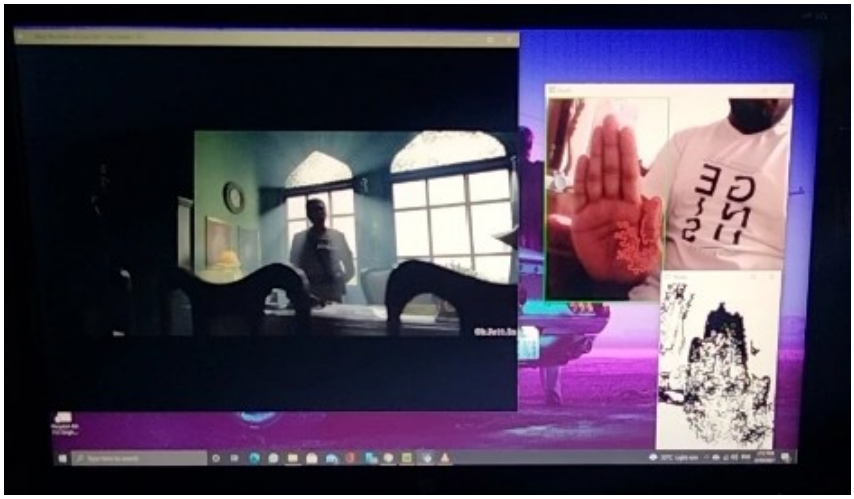
The interface design consists of the input and output source layouts. i.e. the input forms and screens and the report layouts that form as a source of outcome and income in the design and implementation of the information system under study

3.1 Input Design

The input specifications of the existing information system include the illustration of the detailed characteristics of contents included in each Input Screen and documents. The description for each graphical user interface has been mentioned.

EXISTING SYSTEM DESIGN (Graphical User Interface)

1. Main Form



Description

1. Hand recognition- The hand recognition is prepared by using its location and the plotting on hand is the basic differentiating key between the other Movement and solve the purpose for providing identity to each point .

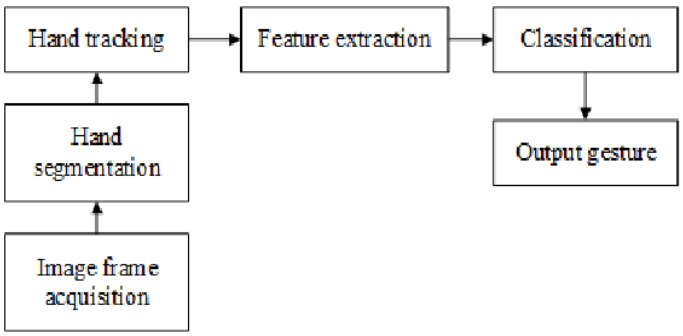
2. Web cam– the user has to open the web -cam so that the system can identify the hand of the user and immediately send the notification .

Theory

3.Motion or Movement –The motion is the unique way of telling the System or a program about what the user want to do ,the system can direct it as command.

4. I.T Analyzing– the system take all the information and intelligently identify all the information and find the authorise and best output blood to the user.

5.Play/stop – after this the system matches the Action entered by the user with the gesture and allocates what the user needed the efficient technique will take that action which can prevent the confusion among the user and System.



3.2 Output Design

The output specifications of the existing information system include the detailed characteristics of contents included in each Report. The description for each Visual Basic Output Report has been mentioned.

1. Report 1

- The Hand gesture based media player is known to be a pilot project that is designed for the Elite peoples to show and let them enjoy the power of tech without touching any key or click.
- The software is designed to handle the functionality of media player used on a daily base or we can say to handle the media activity watched by the person with the advance tech controls of gesture.
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File Linked to: