# Software Requirements Specification

## for

# Mudra Classification

**Prepared by Group-15**

**Computer Science and Engineering, JEC**

**13-01-21**

# Table of Contents

# 1.    Introduction

## 1.1    Category

Desktop Application

## 1.2    Purpose

This document will provide all of the requirements for the project Mudra Classification.

## 1.3    Intended Audience and Reading Suggestions

This project is intended for users who wish to identify and learn the various Indian classical dance actions. The various actions include single hand mudra, double hand mudra, leg alignment, hip movement, eye movement, facial expression, and leg posture. Each dance form has unique gesture. The core theme of the classical dance forms is rightfully conveyed to the viewer. The work makes an effort to help the viewer identify the exact mudra depicted in a dance form  and gives a brief description of it.

## 1.4    Product Scope

India is the land of ancient art and is one among the very few culturally rich countries in the world with diverse culture. Dance is existing in India from ancient times and has been originated from different parts of India. There are 11 classical dance forms in India, mainly describe about inner beauty and divine in man, and not just about the entertainment. Though, dance teachers with the enormous knowledge are available, people are not able to approach them due to heavy work pressure. There are different ways of learning these dances, in the modern technical era. This project is focused on hasta mudras and aims to solve this problem using Machine Learning. Computer Vision and applying Deep learning concepts. Our application takes video inputs of the dance form and gives out the corresponding meaning of the hasta mudra. It also gives out a brief description about the identified mudra. The goal is to aspire the viewers to enjoy the classical dance and get proper recognition when more people get to appreciate the art forms.

## 1.5    References

Websites and Research Paper
http://ijece.iaescore.com/index.php/IJECE/article/view/8206
https://ieeexplore.ieee.org/document/7942540
https://ieeexplore.ieee.org/document/7975593

# 2. Overall Description

## 2.1 Product Perspective

### 2.1.1 Existing System

- Existing systems include YouTube videos and online classes.
- While it displays the art form, it does not convey meaning or description to the general users.

### 2.1.2 Proposed System

- In this project we utilize the concepts of Machine Learning and Image Processing for the classification of the hasta mudras.
- In this, the mudras conveyed through the video will be identified and gives out a brief description about it.

## 2.2 Product Features

- Make the users be aware of the various mudras played by the dancer.
- Gives out a better explanation of the conveyed mudra and various movements.
- User can get in-depth knowledge of various classical dance forms.

## 2.3 User Classes and Characteristics

User of this project should be able to understand the different mudras being conveyed through a video. For the users who wish for more in-depth knowledge of those, they will be able to read it.

## 2.4 Operating Environment

**Operating System Server: Windows 10**

# 3  External Interface Requirements

## 3.1   Software Interfaces

**Development Tools:**  Tensorflow, Jupyter Notebook, MS Visual Studio Code

**Programming Language:** Python

# 4. System Features

## 4.1   Description and Priority

This project has high priority because this work explores the possibilities of recognizing classical dance mudras in various dance forms in India. This work helps new learners and dance enthusiastic people to learn and understand dance forms and related Information on their devices.

## 4.2   Functional Requirements

### 4.2.1   User Interface

This is the user interface module where the user inputs the video. The various mudras are identified and gives out a brief description to the user as output.

### 4.2.2 Data Pre-processing and Feature Extraction

The video data of hand mudras of various classical dances are collected. Then image segmentation and feature extraction are done followed by training of dataset by CNN algorithm and get output as text messages.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

This software should identify the hand gestures accurately and faster. System should also try to minimize error rates.

## 5.2 Extensibility

The software shall be extensible to support future developments. It should be extensible to allow face and various gesture recognition features to be added to system.

## 5.3 Efficiency

The software shall minimize the use of Central Processing Unit (CPU), Graphics Processing Unit and Memory resources on the operating system.