# **Project Design Phase-I - Solution Fit Template**

Project Title: A Novel Method for Handwritten Digit

**Recognition System** 

## Project ID:PNT2022TMID39478

## 1. CUSTOMER SEGMENT(S) CS



Customers are those who work with handwritten numbers in places like banks, schools, colleges, railroads, etc.

### 6. CUSTOMER CONSTRAINTS



- Lack of reliable internet connections. unavailability of gadgets like mobile phones and computers, inaccessibility of appropriate cameras.
- Because handwritten numbers are not always accurate and might have a wide variety of tastes, it is a difficult work for the computer.
- This issue can be solved by using an image of a digit to identify the digit that is present in the image, which is done through handwritten digit recognition.

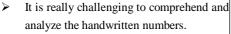
# 5. AVAILABLE SOLUTIONS



- Although there are current alternatives to this approach, they are not very precise, robust, or rotation- and variation-invariant.
- The ability of a computer to honor the mortal handwritten characters from sources. including many photographs, papers, and touch input.

## 2. JOBS-TO-BE-DONE / **PROBLEMS**





- More training data required.
- Hard to recognize digits, dim lighting, weak eyesight.

# 9. PROBLEM ROOT CAUSE



Hand-written digits are in varying fonts and sizes, thus they are becoming increasingly difficult to ascertain due to various factors such as weakening eye-sight, time constraints, etc.

# 7. BEHAVIOUR



- Finding the best software that more quickly and accurately identifies digits.
- Customer wants reliable internet connections and high-quality cameras.

**Explore AS, differentiate** 

### 3. TRIGGERS

Identify strong TR

- > Obtain the data quickly and accurately.
- > The exchange of information is made simple and is one of the simplest ways to speak with a computer and grasp the language.

### 4. EMOTIONS: BEFORE / AFTER

**BEFORE**: Uncertain, Reserved, and Perplexed.

AFTER: Assured, Upright, and Rational.

# 10. YOUR SOLUTION

The solution aims to reliably recognize handwritten digits using Convolutional Neural Network (CNN) algorithm. Therefore, reducing costs for the company and increasing worker productivity.

#### 8. CHANNELS OF BEHAVIOUR

### 8.1 ONLINE

> The processing and uploading of the photographs both require a steady internet connection.

### 8.2 **OFFLINE**

Purchase contemporary electronics and confirm their functionality.