Project Design Phase-I – Problem Solution Fit

Project Title: A Novel Method for Handwritten Digit Recognition System   **Team ID:** PNT2022TMID05025

<table>
<tr>
<td rowspan="2">Define CS, fit into CC</td>
<td>

1. CUSTOMER SEGMENT(S) `CS`

- Clients are those who use handwritten numbers at work or in institutions like banks, colleges, trains, etc.

</td>
<td>

6. CUSTOMER CONSTRAINTS `CC`

- Internet connections that are unreliable, lack of laptops and mobile, and the inaccessibility of cameras that are suitable. Computers have a difficult time processing handwritten numbers since they are frequently inaccurate and can have a wide range of preferences.

- The use of handwritten digit recognition, problem can be resolved by identifying the digit that is present in a picture

</td>
<td>

5. AVAILABLE SOLUTIONS `AS`

- Despite the fact that there are currently alternatives to this strategy, they are not very accurate, reliable, or rotation- and variation-invariant.

- A computer's capacity to respect the imperfect handwriting found in a variety of contexts, such as in documents, pictures, and touch input.

</td>
<td rowspan="2">Explore AS, differentiate</td>
</tr>
<tr>
<td>

2. JOBS-TO-BE-DONE / PROBLEMS `J&P`

- Understanding and analyzing the scribbled numbers is really difficult.

- More training data are needed.

- Dim illumination, poor eyesight, difficult to distinguish the digits.

</td>
<td>

9. PROBLEM ROOT CAUSE `RC`

- Due to several issues including deteriorating eyesight, a lack of time, etc., handwritten digits are more challenging to read because they are written in a variety of fonts and size. (Example) customers have to do it because of the change in regulations.

</td>
<td>

7. BEHAVIOUR `BE`

- Finding the software that recognizes numbers most fast and accurately. The client requests dependable internet and top-notch cameras.

</td>
</tr>
</table>

Left margin: Focus on J&P, tap into BE, understand RC

Right margin: Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS `TR`

- One of the easiest methods to communicate with a computer and learn the language is through information exchange, which is made simple.
- Accurately and efficiently gathering the data.

4. EMOTIONS: BEFORE / AFTER `EM`

Before: Unsure, Protected, and Confused.
AFTER: Confident, upright, and reasonable

10. YOUR SOLUTION `SL`

- The Convolutional Neural Network (CNN) method is used in the solution to accurately recognize handwritten digits. enhancing worker productivity and decreasing costs for the business.

8. CHANNELS of BEHAVIOUR `CH`

OFFLINE
Invest in modern electronics and make sure they work.

ONLINE
A reliable internet connection is needed for both photo processing and uploading.

Identify strong TR & EM