Project Design Phase-I - Problem Solution Fit

Project Title: A Novel Method for Handwritten Digit Recognition System

Team ID: PNT2022TMID27135

Define CS, fit into CC

1. CUSTOMER SEGMENT(S)

CS

Small business owners and **professionals** considering incorporating handwriting recognition apps into their daily operations.

6. CUSTOMER CONSTRAINTS

Some are free, while others require a **one-time payment** or **subscription** or **offer in-app purchases.**

CC

Network latency issues.

Absence of enough familiarity.

5. AVAILABLE SOLUTIONS

AS

Best business app for **remote collaboration**, allowing users to **sync** and share their notes across **different devices**.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS

It **lacked efficiency** and **knowledge** of **unexpected characters** when **classical techniques** were used for recognition of handwritten words or digits.

J&P

9. PROBLEM ROOT CAUSE

RC

Character extraction: When the **letters** are **connected**, it makes it **hard** for **computers** to **recognize individual characters**.

Feature extraction: **Individual properties** of symbols were **hard-coded**, and matched to input symbols. This **requires development time**, as these properties are added manually.

7. BEHAVIOUR

BE

Avoid poor quality or **illegible handwriting.**

Perform **accurate data capture** and **validation** on particular type (*say for example* - **doctor's handwriting**) of form-filling may result in little meaningful data being extracted.

Focus on J&P, tap into BE, understand RC

3. TRIGGERS

TR

When **the peer group start to use**, it also promotes the surrounding large community of people to use the same.

Collecting **positive feedback** of the technology from the users.

4. EMOTIONS: BEFORE / AFTER

Customers feel **lost** and **insecure** when they face problems.

Once it is resolved, it provides them **confidence** and **satisfied**.

EM

10. YOUR SOLUTION

SL

Neural networks have been used to classify even unseen alphabets. This means, models can be generalized for any language, and does not require training on a specific character database.

Seven deep CNNs trained identical classifiers on data, pre-processed in different ways. The results are comparable to **human-like performance**.

8.CHANNELS of BEHAVIOUR

CH

8.1 ONLINE

The **technology** relies on **cloud-based storage** and **access**, thus customers must ensure their **connectivity** across the network.

8.2 OFFLINE

Camera used in the process should be of **high quality**.

Improved photography practices.