

Project Design Phase-I Problem – Solution Fit

Date	27 September 2022
Team ID	PNT2022TMID27796
Project Name	A novel method for handwritten digit recognition
Maximum Marks	2 Marks

Problem-Solution Fit Canvas:

Problem-Solution fit canvas 2.0

Purpose/Vision A novel method for handwritten digit recognition

<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Define CS, fit into CC</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">CS</div> 1. CUSTOMER SEGMENT(S) <small>Who is your customer?</small> <ul style="list-style-type: none"> *Government employees *banker *People working with hand-written textual data that want to recognize and process hand-written digits automatically. *A person who needs to read postal addresses, bank check amounts, and forms </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Focus on J&P, up into BE, understand RC</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">CC</div> 6. CUSTOMER <small>What constraints prevent your customers from taking action or implementing a solution?</small> <p>availability of proper cameras, lack of stable internet connections, availability of devices such as mobiles and laptops. It is a hard task for the machine because handwritten digits are not perfect and can be made with many different flavors. The handwritten digit recognition is the solution to this problem which uses the image of a digit and recognizes the digit present in the image.</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Explore AS, differentiate</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">AS</div> 5. AVAILABLE SOLUTIONS <small>Which solutions are available to the customer when they face the problem? What have they tried in the past? What previous approaches have they used? What is an alternative to digital?</small> <ul style="list-style-type: none"> *There are existing alternative solutions for this problem but these approaches are rather inaccurate and are not robust or invariant to rotations and variations. *The capability of a computer to fetch the mortal handwritten integers from different sources like images, papers, touch device. </div> </div>
<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Identify strong TR & EM</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">J&P</div> 2. JOBS-TO-BE-DONE / PROBLEMS <small>What jobs do customers get done? Do you deliver to your segment? What are the most important aspects of different roles?</small> <ul style="list-style-type: none"> *Jobs: Recognizing and ascertaining the handwritten digits *Problems: Hard to recognize digits, dim lighting, weak eyesight </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Focus on J&P, up into BE, understand RC</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">RC</div> 9. PROBLEM ROOT CAUSE <small>What influenced causes further problems occur? What are the root causes behind the need to do this job? What are the reasons for the change in requirements?</small> <p>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.</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Focus on J&P, up into BE, understand RC</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">BE</div> 7. BEHAVIOUR <small>What does your customer do to address the problem and purchase data? What are the related activities, channels, and outcomes? What are the related activities, channels, and outcomes?</small> <p>Customer seeks quality cameras and stable internet connection services. Customer may also obtain devices such as mobiles and laptops</p> </div> </div>
<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Identify strong TR & EM</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">TR</div> 3. TRIGGERS <small>What triggers customers to act? What are the triggers that lead to the problem? What are the triggers that lead to the problem?</small> <p>The live recognition rate highly depends on the digit skew, as automatic de-skewing was not implemented, but manually performed.</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Identify strong TR & EM</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">SL</div> 10. YOUR SOLUTION <small>If you are working on an existing business, understand your current solution. If you are working on a new business proposition, then keep it blank until you have a canvas and come up with a solution that addresses customer limitations, solves a problem and retains customer.</small> <p>The proposed solution aims to accurately recognize hand-written digits using deep learning and computer vision techniques thereby saving costs to the organization and improving employee productivity.</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Extract value & define CH of BE</div> <div> <div style="text-align: right; font-weight: bold; color: #e91e63;">CH</div> 8. CHANNELS of BEHAVIOUR <small>What kind of channels do customers use? Extract and channel them. What are the channels that lead to the problem? What are the channels that lead to the problem?</small> <p>Stable internet connection is required for uploading and processing of the images.</p> <p>Procure modern electronic devices and ensure they're working</p> </div> </div>