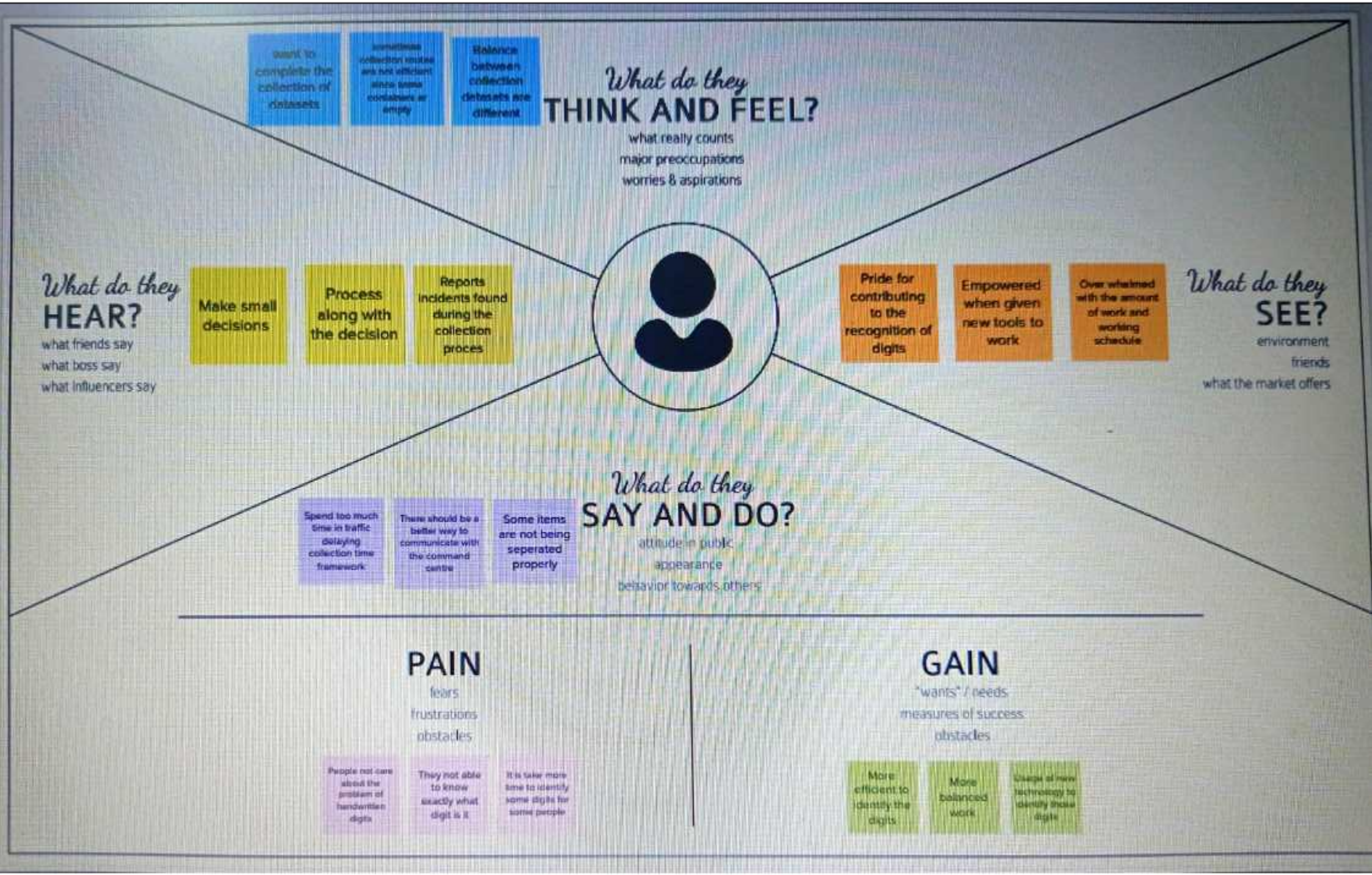
want to complete the collection of datasets
sometimes collection routes are not efficient since some containers ar empty
Balance between collection datasets are different
What do they THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
What do they HEAR?
what friends say
what boss say
what influencers say
Make small decisions
Process along with the decision
Reports incidents found during the collection proces
Pride for contributing to the recognition of digits
Empowered when given new tools to work
Over whelmed with the amount of work and working schedule
What do they SEE?
environment
friends
what the market offers
Spend too much time in traffic delaying collection time framework
There should be a better way to communicate with the command centre
Some items are not being seperated properly
What do they SAY AND DO?
attitude in public
appearance
behavior towards others
PAIN
fears
frustrations
obstacles
People not care about the problem of handwritten digits
They not able to know exactly what digit is it
It is take more time to identify some digits for some people
GAIN
"wants" / needs
measures of success
obstacles
More efficient to identify the digits
More balanced work
Usage of new technology to identify those digits

Problem Statement

A Novel Method for Handwritten Digit Recognition System

The handwritten digit recognition is the capability of computer applications to recognize the human handwritten digits. It is a hard task for the machine because handwritten digits are not perfect and can be made with different shapes and sizes. The handwritten digit recognition system is a way to tackle this problem which uses the image of the digit and recognizes the digit present in the image. Convolutional Neural Network model created using PyTorch library over the MNIST dataset to recognize handwritten digits.

Goal:

The aim of the handwritten digit recognition system is to convert handwritten digits into machine readable formats. The main objective of this work is to ensure effective and reliable approaches for recognition of handwritten digits and make banking operations easier and error free.

Recently handwritten digit recognition became vital scope and it is appealing many researches because of its using in variety of machine learning and computer vision applications. However, there are deficient works accomplished on Arabic pattern digits because Arabic digits are more challenging than English patterns.

Handwritten digit recognition is the ability of a computer to recognize the human handwritten digits from different sources like images, papers, touch screens, etc. and classify them into 10 predefined classes (0-9). This has been a topic of boundless research.

Conducting a brainstorm

LITERATURE SURVEY

1. Nimisha Jain, Kumar Rahul, Ipshita Khamaru, AnishKumar Jha, Anupam Ghosh (2017). "Hand Written Digit Recognition using Convolutional Neural Network (CNN)", International Journal of Innovations & Advancement in Computer Science, IJIACS,ISSN 2347 – 8616,Volume 6, Issue 5.

2. Dr Kusumgupta2 ,"A Comprehensive Review On Handwritten Digit Recognition Using Various Neural Network Approaches", International Journal Of Enhanced Research In Management & Computer Applications, Vol. 5,No. 5, Pp. 22-25, 2016.

3. Nurul Ilmi, Tiokorda Agung Budi W and Kurniawan Nur R, "Handwriting Digit Recognation using Local Binary Pattern Varience and K-Nearest Neighbor," 2016 Fourth International Conference on Information and Communication Technologies (ICoICT).

4. Tobias Kutzner, Mario Dietze, Ingrid Bönninger, Carlos M. Travieso, Malay Kishore Dutta, and Anushikha Singh, "Online Handwriting Verification with Safe Password and Incresing Number of Features,"2016 3rd International Conference on Signal Processing and Integrated Networks (SPIN).

5. Haider A. Alwzwazy1, Hayder M. Albehadili2, Younes S. Alwan3, Naz E. Islam4, "Handwritten Digit Recognition using Convolutional Neural Networks", International Journal of Innovative Research in Computer and Communication Engineering, vol. 4, no. 2, pp. 1101-1106, 2016.

6. Youssouf Chherawala, Partha Pratim Roy and Mohamed Cheriet, "Feature Set Evaluation for Offline Handwriting Recognition Systems: Application to the Recurrent Neural Network," IEEE TRANSACTIONS ON CYBERNETICS, VOL. 46, NO. 12, DECEMBER 20167. A. Dutta and A. Dutta, Handwritten digit recognition using deep learning, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), vol. 6, no. 7, July 2017.

8. Hamid, Norhidayu Abdul, and NilamNur Amir Sjarif.Handwritten recognition using SVM, KNN and neural network, arXiv preprint arXiv:1702.00723 (2017).

9. Peiyu Ma; (2020). *Recognition of Handwritten Digit Using Convolutional Neural Network, 2020 International Conference on Computing and Data Science (CDS)*

10. G. S. Lopes, D. C. da Silva, A. W. O. Rodrigues, and P. P. Reboucas Filho, "Recognition of handwritten digits using the signature features and Optimum-Path Forest Classifier," IEEE Lat. Am. Trans., vol. 14, no. 5, pp. 2455–2460