Before you collaborate

A little bit of preparation goes a long way with thissession. Here's what you need to do to get going.

10 minutes

TIP

You can select a sticky noteand hit the pencil [switch to sketch] icon to start drawing!

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your teamcan unleash their imagination and start shaping concepts even if you'renot sitting in the same room.

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be thefocus of your brainstorm.

5 minutes

Title

A Novel Method for Handwritten Digit Recognition System

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Problem Statement

Handwritten digit recognition is the ability ofa 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).

Pavithra.S

Input Image is fedand with the help of dataset librariesand processing of data using Pythonand output is predicted.

Cross-validation which divides the data set into k subsets and looksfor the best test totrain data ratio.

MNIST is subset of NIST which is acombination of Special Database 1 and Special Database 3

Nandha Kumar.S

A supervised Machine LearningAlgorithm Support Vector Machine may be used

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is biggerthan six sticky notes, try and see if you and break it up into smaller sub-groups.

A Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

20 minutes

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important andwhich are feasible.

20 minutes

TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Python Programming

After you collaborate

You can export the mural as an image or pdf to share withmembers of your company who might find it helpful.

Quick add-ons

- **Share the mural**
  Share a view link to the mural with stakeholders to keepthem in the loop about the outcomes of the session.
- **Export the mural**

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open HYPERLINK "https://support.mural.co/en/articles/2113740-facilitation-superpowers"_ HYPERLINK "https://support.mural.co/en/articles/2113740-facilitation-superpowers"article
Export a copy of the mural as a PNG or PDF to attach toemails, include in slides, or save in your drive.

CNN [CONVOLUTIONALNEURAL NETWORKS]

Using a three-layered Neural Network:The input layer-Takes images,The Hidden layer
-providing nonlinear ties for the network,The Output Layer-provides uswith the final prediction of the Neural Network

10 minutes to prepare
1 hour to collaborate
2-8 people recommended

Import required libraries and load Dataset,Splitting ofData,Visualisation of data,Normalize Data,Model Training

Using a three-layered Neural Network:The input layer-Takes images,The Hidden layer
-providing nonlinear ties for the network,The Output Layer-provides us with the final prediction of the Neural Network

MNIST(Modified National Institute of Standards and Technology database) contains a total of 70,000 handwritten

digit images

Pre-processing is aninitial step in the machine and deep learning which
may be used for improving the input databy reducing unwanted impurities and redundancy

Key rules of brainstorming

To run an smooth and productive session

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

CONVOLUTIONALNEURAL
NETWORKS usagein MNIST Dataset

Convolutional Neural Network (CNN) is a deep learning algorithm that can be used forimage recognition and classification

CNN [CONVOLUTIONALNEURAL NETWORKS]

Keep moving forward

Strategy blueprint
Define the components of a new idea orstrategy.

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Customer experience journey map
Understand customer needs, motivations, andobstacles for an experience.

MNIST(ModifiedNational Institute of Standards and Technology database)

MNIST is subset of NIST which is acombination of Special Database1 and Special Database 3

Stay in topic. Defer judgment.

Encourage wild ideas.Listen to others.

Importance

Creating of CNN Models forusage in pythondata science project.
Input Image is fed and with the help of dataset librariesand processing of data using Python and output is predicted.
Python Programming with Keras andTkinter kinds of Libraries.

Python Programming

Convolutional Neural Network (CNN) is a deep learning algorithm that can be used forimage recognition and classification

A multilayer perceptron(MLP) is a class of feedforward artificial neural

networks (ANN) .It consists of three layers:input layer, hidden layerand

output layer

CONVOLUTIONALNEURAL
NETWORKS usagein MNIST Dataset

If each of these tasks could get done without anydifficulty or cost,

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MNIST(ModifiedNational Institute of Standards and Technology database)

SupportVector Machine(SVM)

Strengths, weaknesses, opportunities & threats

Identify strengths, weaknesses, opportunities,

Go for volume. If possible, be visual.

The images are represented as a N x N matrix where eachcell contains grayscale pixel valueand training images of handwritten digitsimages for testing.

Using supervisedmachine learningtechnique namedSupport Vector Machine Classifier.

Lavanya.M

Deepika.T

which would have the most positive impact?

and threats (SWOT) to develop a plan.

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The handwritten digit images can betransformed into
histograms and thesehistograms can be fed into a neural network

Back-propagationcan be applied without a complex pre- processing stage

Training and Evaluation of Models using Epochs and Batch Size maybe Used.

Some Preprocessing Steps to performOperations and Process the Data.

Bayesian decision theorycan be used to minimise classification error

Pattern recognition can be done by two stages namely feature extractionand classification

Python Programming with Keras andTkinter kinds of Libraries.

CONVOLUTIONALNEURAL
NETWORKS usagein MNIST Dataset

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Deep LearningConcepts along with some given dataset.

Creating of CNN Models forusage in pythondata science project.

The Nearest Neighbor (NN) rule can be used to classifyhandwritten characters

Artificial Neural Network system can b used to recognize ten different handwritten digits

SupportVector Machine(SVM)

Using supervisedmachine learningtechnique namedSupport Vector Machine Classifier.

A supervised Machine LearningAlgorithm Support Vector Machine may be used

Some Preprocessing Steps to performOperations and Process the Data.

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Feasibility

TIP
Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the Ctrl key on the keyboard.

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

See a finished version of this template to kickstart your work.