Ideation Phase
Brainstorm & Idea Prioritization Template

Assignment Date	19 September 2022
Team ID	PNT2022TMID27796
Project Name	A Novel Method for Handwritten Digit Recognition System
Maximum Marks	2 Marks

Brainstorm & Idea Prioritization Template:

Step-1 Team gathering collaboration and select the problem statement

Step-2: Brainstorm, Idea Listing and Grouping

Brainstorm and Idea Listing

2

Brainstorm

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

⏱ **10 minutes**

ADITYA R

MNIST database of handwritten digits has a training set of 60000 examples ,and test set of 10000 examples.It is a subset of alarger set available from NIST.The digits have been size-normalized and centered in a fixed-size image

Convolution layer with RelU activation function and a max-pool layer. RelU introduces non-linearity and Max-pooling helps with removing noise.

The algorithm used by convolutional neural networks is better suited for visual image processing than the one used in traditional artificial neutral networks convolutional layers and pooling layers

When you check the shape of the dataset to see if it is compatible to use in for CNN

HARISH KUMAR B

Convolutional layers take advantage of the fact that all image can be encoded in terms of 1s and 0s to create feature maps. A feature detectors is simply a matrix, whose values correspond to a feature of the image. The matrix overlays a section the image and perform wise multiplication with all of the value at that location

The results of the bit-wise multiplication are summed and put in the corresponding location of the feature map. It then shift to another section of the image and repeats the process until it has traversed the entire image

The data set contains 60,000 training images and 10000 testing images. Here the data is split into training and testing datasets respectively. The x_train & x_test contains grayscale codes while y_test&y_train contains labels from 0-9 which represent the numbers

Many machine learning algorithms cannot operate on label data directly.They require all input variables and output variables to be numeric.

AKASH KV

After the model is defined, we need to evaluate it using various accuracy metrics available from k fold cross validation to precision, recall or F1 score

Find a way to upload or host the trained model in the cloud. So when a user inputs his drawing of a number the web app would help recognise the number

Create an editable canvas for the user to draw the numbers by utilising the handlers available for the mouse and touch by knowing the mouse up, down, touch and leave

SGD is the most basic form of GD. SGD subtracta the gradient multiplied by the learning rate from the weights. Despite its simplicity. SCG has strong theoretical foundations and is still used in training edge NNs.

RAJAI SHANKAR P

Optimizers are algorithm or methods used to change the attributes of your neutral network such as weights and learning rate in order to reduce the losses

How you should change your weights or learning rates of your neutral to reduce the losses is defined by the optimizers you use. Optimization algorithm or strategies are responsible for reducing the losses and to provide the most accurate results possible

Through conventional wisdom suggests that . Adam does not require tuning, we find that tuning the initial learning rate and decay scheme for Adam yields significant improvements over its default setting over its default setting in all cases

Dimensionality reduction is achieved using a sliding window with a size less than that of the input matrix. Which reduces the processing time of the CNN model

Grouping

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

⏱ **20 minutes**

DataSet

MNIST database of handwritten digits has a training set of 60000 examples ,and test set of 10000 examples.It is a subset of alarger set available from NIST.The digits have been size-normalized and centered in a fixed-size image

The data set contains 60,000 training images and 10000 testing images. Here the data is split into training and testing datasets respectively. The x_train & x_test contains grayscale codes while y_test&y_train contains labels from 0-9 which represent the numbers

When you check the shape of the dataset to see if it is compatible to use in for CNN

Many machine learning algorithms cannot operate on label data directly.They require all input variables and output variables to be numeric.

Optimizer

SGD is the most basic form of GD. SGD subtracta the gradient multiplied by the learning rate from the weights. Despite its simplicity. SCG has strong theoretical foundations and is still used in training edge NNs.

Optimizers are algorithm or methods used to change the attributes of your neutral network such as weights and learning rate in order to reduce the losses

How you should change your weights or learning rates of your neutral to reduce the losses is defined by the optimizers you use. Optimization algorithm or strategies are responsible for reducing the losses and to provide the most accurate results possible

Through conventional wisdom suggests that . Adam does not require tuning, we find that tuning the initial learning rate and decay scheme for Adam yields significant improvements over its default setting over its default setting in all cases

Model

Convolution layer with RelU activation function and a max-pool layer. RelU introduces non-linearity and Max-pooling helps with removing noise.

The algorithm used by convolutional nerural networks is better suited for visual image processing than the one used in traditional artificial neutral networks convolutional layers and pooling layers

Convolutional layers take advantage of the fact that all image can be encoded in terms of 1s and 0s to create feature maps. A feature detectors is simply a matrix, whose values correspond to a feature of the image. The matrix overlays a section the image and perform wise multiplication with all of the value at that location

Dimensionality reduction is achieved using a sliding window with a size less than that of the input matrix. Which reduces the processing time of the CNN model

Evaluation

The results of the bit-wise multiplication are summed and put in the corresponding location of the feature map. It then shift to another section of the image and repeats the process until it has traversed the entire image

After the model is defined, we need to evaluate it using various accuracy metrics available from k fold cross validation to precision, recall or F1 score
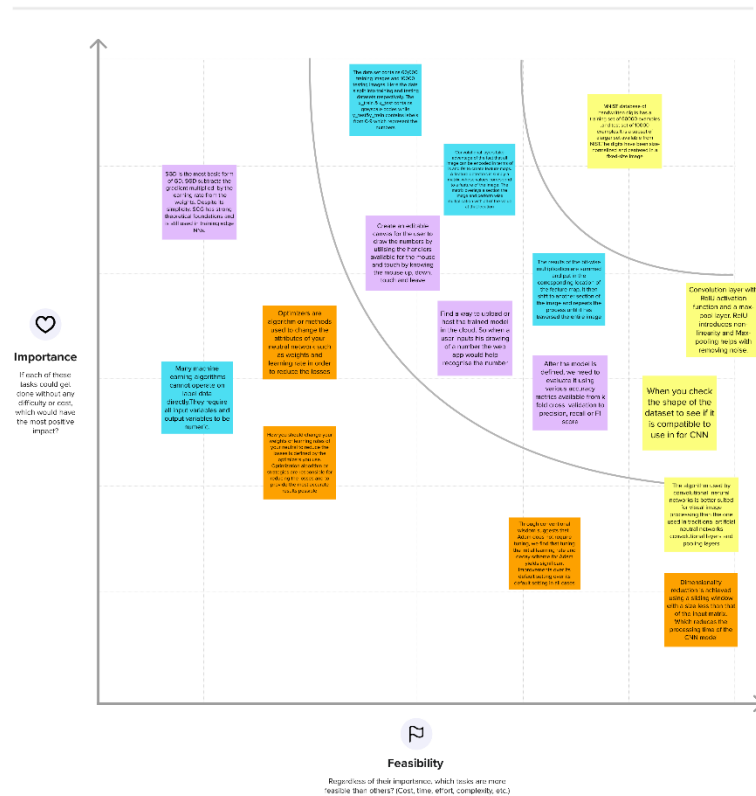
Step-3: Idea Prioritization

④ 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 and which are feasible.

⏱ 20 minutes

Importance

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Feasibility

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