

Ideation Phase
Brainstorm & Idea Prioritization Template

Date	15 October 2022
Team ID	PNT2022TMID01315
Project Name	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation
Maximum Marks	4 Marks


Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare

🕒 1 hour to collaborate

👤 2-8 people recommended

🗨️ Share template feedback

➔

Before you collaborate

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

🕒 10 minutes

A

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

B

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

C

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

Open article ➔

1


Define your problem statement

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

🕒 5 minutes

PROBLEM

The heart's irregular rhythm is called as *Arrhythmia*
The goal of our project is to classify arrhythmia by using Deep learning with 2D ECG Spectral Image Representation



Key rules of brainstorming

To run an smooth and productive session

🗨️ Stay in topic.


💡 Encourage wild ideas.

⏸️ Defer judgment.

👂 Listen to others.

🗨️ Go for volume.

👁️ If possible, be visual.



Need some inspiration?

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

Open example ➔

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

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

10 minutes

TIP

You can select a sticky note and hit the pencil icon to start drawing!

BHARATHI

Extracting the signal from MIT-BIH and St.Petersburg databases

Scaling the data to a smaller range and balancing both the databases

The proposed model is CNN-Bi-LSTM.It contains CNN and Bi-LSTM algorithms

The performance is evaluated by training and validating both the databases seperately

LIKITHA

Extracting dataset from MIT-BIH database

Removing QRS complex,P waves and T waves

CNN-LSTM and RRHOS-LSTM are used for developing the model

Verification network is used to validate performance and decrease false positive

JAYASREE

The MIT-BIH arrhythmia database is used to train and test the CNN model.

R peaks in ECG signals are detected and segmented using biosppy and converted into grayscale images

Six ECG arrhythmia beats are augmented with nine different cropping methods in the dataset

The training and test set are validated using sklearn's train_test_split

ABIRAMI

Extracting ECG sample from MIT database

Performing noise filtering and image fragmentation

In Image Generation, GAF and MTF is generated

CNN uses feature extraction in training process

3

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 can break it up into smaller sub-groups.

20 minutes

Collecting Dataset

Extracting the signal from MIT-BIH and St.Petersburg databases

Extracting dataset from MIT-BIH database

Extracting ECG sample from MIT database

TIP

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

Image preprocessing

Scaling the data to a smaller range and balancing both the databases

Removing QRS complex,P waves and T waves

Performing noise filtering and image fragmentation

R peaks in ECG signals are detected and segmented using biosppy and converted into grayscale images

Deep Learning Models Used

CNN-LSTM and RRHOS-LSTM are used for developing the model

The proposed model is CNN-Bi-LSTM.It contains CNN and Bi-LSTM algorithms

CNN model is used as a deep learning model

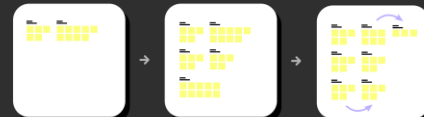
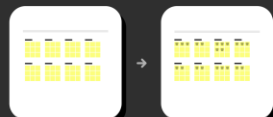
Training and validation

The performance is evaluated by training and validating both the databases seperately

Verification network is used to validate performance and decrease false positive

Feature extraction in training process instead of implementing manually

The training and test set are validated using sklearn's train_test_split



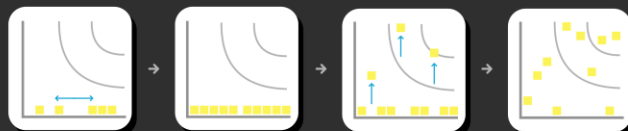
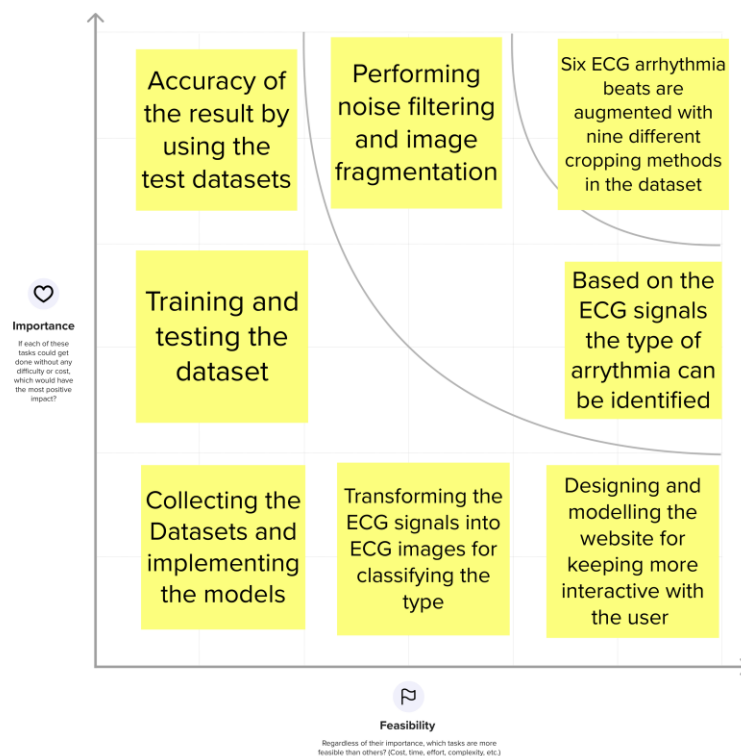
Step-3: Idea Prioritization

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



→

After you collaborate

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

Quick add-ons

- Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

- Strategy blueprint**
Define the components of a new idea or strategy.
[Open the template →](#)
- Customer experience journey map**
Understand customer needs, motivations, and obstacles for an experience.
[Open the template →](#)
- Strengths, weaknesses, opportunities & threats**
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
[Open the template →](#)

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