


# Ideation Phase

## Brainstorm & Idea Prioritization Template

Date	17 September 2022
Team ID	PNT2022TMID15718
Project Name	Classification of arrhythmia by using deep learning with 2-d ecg spectral image representation

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

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### 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

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**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**

A Novel Method for Handwritten Digit Recognition

Handwriting recognition is a challenging task because every person in this world has their own style of writing. It is the capability of the computer to automatically identify and understand the handwritten digits. Due to the technological advancements, everything is being digitalized to reduce human effort. Hence, handwritten digit recognition is a need-of-the-hour task in many real-time applications. MNIST data set, which has 70000 handwritten digit samples, is widely used for this recognition process.

**Key rules of brainstorming**

To run an smooth and productive session

- Stay in topic.
- Defer judgment.
- Go for volume.
- Encourage wild ideas.
- Listen to others.
- If possible, be visual.

## Step-2: Brainstorm, Idea Listing and Grouping

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### 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 (switch to sketch) icon to start drawing!

### Karuturi Hemanth Suresh

The proposed CNN model works on 2-D images of ECG signals as input data	ECG signals, augmenting training data manually could degrade the performance	It should not have any limited amount of user or data
The early detection of Arrhythmia gives better understanding of disease causes	The early diagnosis of cardiac arrhythmia highly relies on the ECG	Consume less time to finish the test and give the result
It can also categorize according to risk levels	Implemented in Python with the open source library TensorFlow	The present research uses only a single-lead ECG signal

### Kalapala Sri Ram

An irregular or abnormal heartbeat	Pause in sinus rhythm	Evaluating the eeg tracing
Abnormalities of impulse generation or abnormalities of impulse conduction or both	Abnormalities of cardiac electrical activity result	Based on Heart rate
noninvasive diagnostic technique	ECG data to use features based on the engineer,	the mapping techniques for arrhythmia classification techniques using a deep neural network

### M Dhanush

Incorporating different approaches of machine learning (ML) techniques	Analysis of Digitalized ECG Signals Based on Artificial Intelligence	Detection of Obstructive Sleep Apnoea Using Features Extracted
Detection of Inferior Myocardial Infarction using Shallow CNN	Multi-Lead ECG Classification via an Information-Based Attention	compared with AlexNet and VGGNet
Each convolutional layer is followed by a pooling layer	The model follows the CNN architecture with four 2-D convolutional layers	A fully connected layer is used between the last pooling layer and the output layer

### Konduru Nitish

optimization parameters in the proposed 2-D CNN model	Long term monitoring	It is quick, safe and painless test
Detects irregular heart beats	can ECG detect heart blockage	can be easily added to modified
delivering more preventive care	poor electrode to patient contact	Remote access and availability

### Step-3: Idea Prioritization

