Classification of arrhythmia by using deep learning with 2-D ECG Spectral Image Representation

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
- This is a text box...
- This is a text box...

Share template feedback

Need some inspiration
See a finished version of this template to kickstart your work.
Open example

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

1. Identify the Arrhythmia disease using deep learning technique.
2. Faster classificaion with maximum accuracy.

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.

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 [switch to sketch] icon to start drawing!

A Prasanth

- Use low pass filter
- Use mobile phones to display ECG
- Use quality electrode
- Use Convolutional Neural Networks
- Reduce paper work
- Faster reload time

R Rithan

- Use open source Python code
- Use reusable components
- Use proper electrode application
- Use Generative Adversarial Networks
- Train with large dataset
- Reduce usage of electrodes

R Prasanth

- Use Graphical user interface
- Use electrodes made from scrap material
- Artifact elimination
- Use long shot term memory networks
- Remove noises from input image
- Kardia device Get medical data that you can share with your doctor.

Bharath

- Use grid and signal digitization
- USB and Bluetooth to convert analog ECG to digital stream
- Proper lead selection
- Use Recurrent Neural Networks
- Analysis of cardiac cycle per minute
- Kardia device is a pocket - sized and the results are immediately displayed

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 and break it up into smaller sub-groups.

20 minutes

To Reduce Cost Of ECG

- Use open source Python code
- Use low pass filter
- Use Graphical user interface
- Use grid and signal digitization

To speed up classification

- Train with large dataset
- Reduce paper work
- Remove noises from input image
- Analysis of cardiac cycle per minute

To Increase accuracy

- Use reusable components
- Use electrodes made from scrap material
- USB and Bluetooth to convert analog ECG to digital stream
- Use mobile phones to display ECG

To get clear Input data

- Use proper electrode application
- Use quality electrode
- Artifact elimination
- Proper lead selection

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

- Use grid and signal digitization
- Use mobile phones to display ECG
- Train with large dataset
- Use Convolutional Neural Networks
- Remove noises from input image
- Analysis of cardiac cycle per minute
- Use low pass filter
- Reduce usage of electrodes

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.)

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 **H key** on the keyboard.

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

A. Share the mural
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

B. 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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