

Ideation Phase

Brainstorm & Idea Prioritization Template

Date	19 September 2022
Team ID	PNT2022TMID06155
Project Name	Project-A Gesture-based Tool for Sterile Browsing of Radiology Images
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.

Reference: <https://www.mural.co/templates/empathy-map-canvas>

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



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

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.

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1 Define your problem statement
Gesture based tool for sterile browsing of radiology images

🕒 5 minutes

PROBLEM

To reduce the displacement of surgeon or user and keep devices sterile in operating room by using hand gesture recognition for browsing radiology images

Key rules of brainstorming
To run a smooth and productive session

- 🗣️ Stay in topic.
- 💡 Encourage wild ideas.
- ⏸️ Defer judgment.
- 👂 Listen to others.
- 🗣️ Go for volume.
- 👁️ 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

Mohanasundaram M

Using Convolutional Neural Networks

Image thresholding

Binary imaging

Object detection using external python frameworks or libraries

Image detection

Using webcam or infrared camera to capture hand

Lokesh S

Gesture detection using training and testing of CNN model

Skin or glove colour extraction

Image enhancement using erosion/dilation of foreground object or white region (decreased)

Image enhancement using dilation/erosion of foreground object or white region (increased)

Train the CNN model from external libraries using dataset

Dhayalan M

Use object detection

Skin colour extraction

Image enhancement

image processing techniques like thresholding

Counting fingers using image processing

Use libraries like numpy, pandas,etc..

Mariraj K

Background subtraction

Skin colour seperation

Using openCV webcam video is converted into frames

Counting fingers using convex hull method

Counting fingers using image detection

Sarath M

We can use flask framework and HTML template, CSS for the UI

Reduce the resolution of the segmented hand image for better performance

Use pretrained model like mediapipe

Use (HTML,CSS,JS) for browsing and showing radiology images

Use HTTP requests and responses to communicate with python code from web UI

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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 bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

Image processing techniques

Background subtraction

Image thresholding

Skin or glove colour extraction

Binary imaging

Counting fingers using convex hull method

Image enhancement using dilation/erosion of foreground object or white region (increased)

Counting fingers using image detection

Image detection

Image enhancement using erosion/dilation of foreground object or white region (decreased)

Machine learning techniques

Using Convolutional Neural Networks

Gesture detection using training and testing of CNN model

Use libraries like numpy, pandas,etc..

Object detection using external python frameworks or libraries

Use pretrained model like mediapipe

User Interface

We can use flask framework and HTML template, CSS for the UI

Use (HTML,CSS,JS) for browsing and showing radiology images

Use HTTP requests and responses to communicate with python code from web UI

Image capture and compression

Using webcam or infrared camera to capture hand

Using openCV webcam video is converted into frames

Reduce the resolution of the segmented hand image for better performance

Step-3: Idea Prioritization

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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

