



## 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 icon to start drawing!

PRAVIN RAJ P R

FPGA can be used as accelerator to develop low latency model

The dataset must contain only the region of interest (ROI) for accurate model

The necessary features can be extracted via convolution and pooling layers

A gesture can be used to confirm the gesture predicted by the model

The categorical crossentropy can be used as loss function for this model

KISHOR G

To develop a model for hand gesture recognition with low processing time

Large dataset can be used to train model perfectly to improve model accuracy

VGG16 architecture can be used instead of sequential model for better accuracy

The gesture recognition algorithm using support vector machine (SVM) and histogram of oriented gradient (HOG) is developed for good accuracy

By choosing appropriate kernel size and suitable weight accuracy can be improved

SHANMUAASARAN D

The decreasing hardware and processing costs makes the gesture recognition model more practical for widespread use

To develop a model using CNN, most commonly applied to analyse visual imagery

To build an algorithm for preprocessing images to predict accurately

AKIL KRUSHANAN A

Computer vision methods for hand gesture interfaces to achieve interactivity and usability

To develop a model to eliminate noise in images

To develop an algorithm for fast recognition, so that actions can be taken as soon as possible

The reaction time of the system can be reduced by Kinect sensors and HD camera

Ensuring the model which takes less training time and storage space

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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 can 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 (size of foreground object or white region increased)

Counting fingers using image detection

Image detection

Image enhancement using erosion (size 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

