

# Kalah - One Place for All Artist

Team:

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## 1. **Motivation & Background**

- We have observed that there are a lot of small artists trying to sell affordable art pieces on the streets of New York City.

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- These artists do not have a considerable online presence.
- There are many websites that sell art or feature artists but they mostly deal with very expensive art pieces and renowned artists.
- We have also observed that an average person who does not have a good understanding of art might get attracted to it if explained in an exciting way, and what's better than a description coming from the artist themselves?
- We want to bridge the gap between artists and middle-class people who would like to buy affordable art for themselves and might not have a great understanding of it.

## 2. Problem

- We will be building a platform to enable small artists to tell their stories and market their art pieces, ultimately enabling them to sell their art pieces online.
- Our platform will have multiple pages
  - a) Home page- A page where user can search for the art pieces based on artist name, description and labels
  - b) Upload Art - A place where artist can upload art piece with all the detail
  - c) Predict Artist - Predict artist from art image.
- Product Features:
  - Login/SignUp
  - Search Arts
  - Know about the artist
  - Some details regarding the art
  - Find artist from Image
- Data Sources:  
<https://www.kaggle.com/code/paultimothymooney/collections-of-paintings-from-50-artists>
- Existing Products:
  - <https://www.architecturaldigest.com/story/affordable-art-online>
  - [https://www.singulart.com/en/?campaign\\_id=203&keyword=buy%20art%20online&matchtype=e](https://www.singulart.com/en/?campaign_id=203&keyword=buy%20art%20online&matchtype=e)

## 3. System Design

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## Design for Predict Artist from Art Image

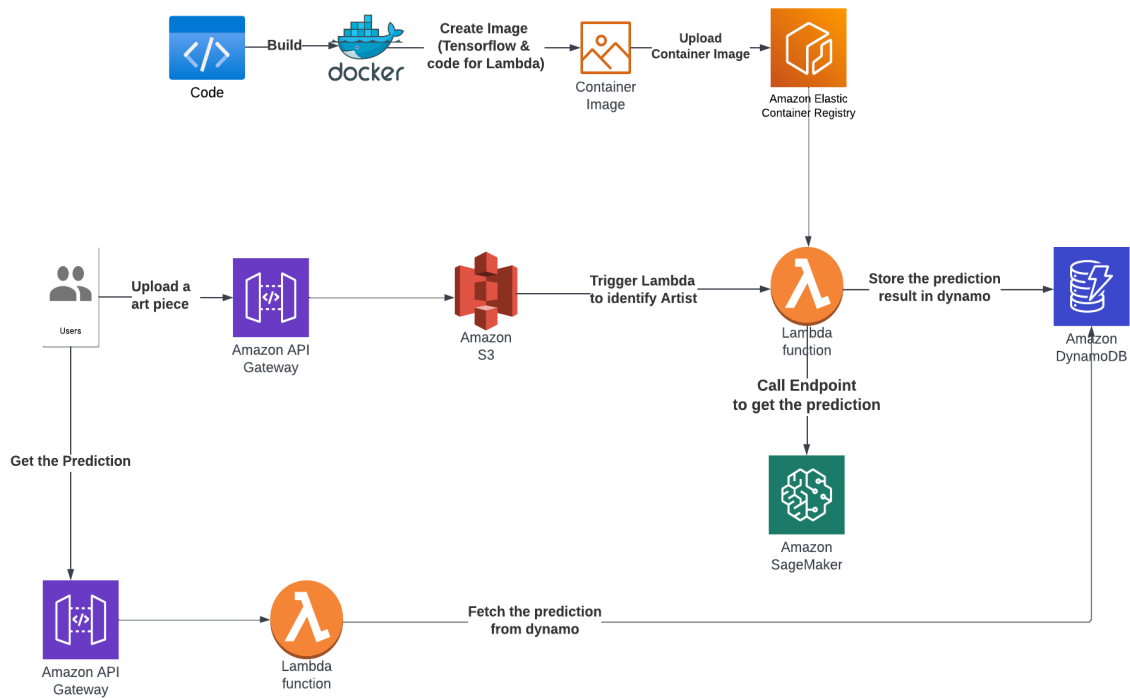


Figure: Predict Artist from Art Image

## Store and Search Art pieces

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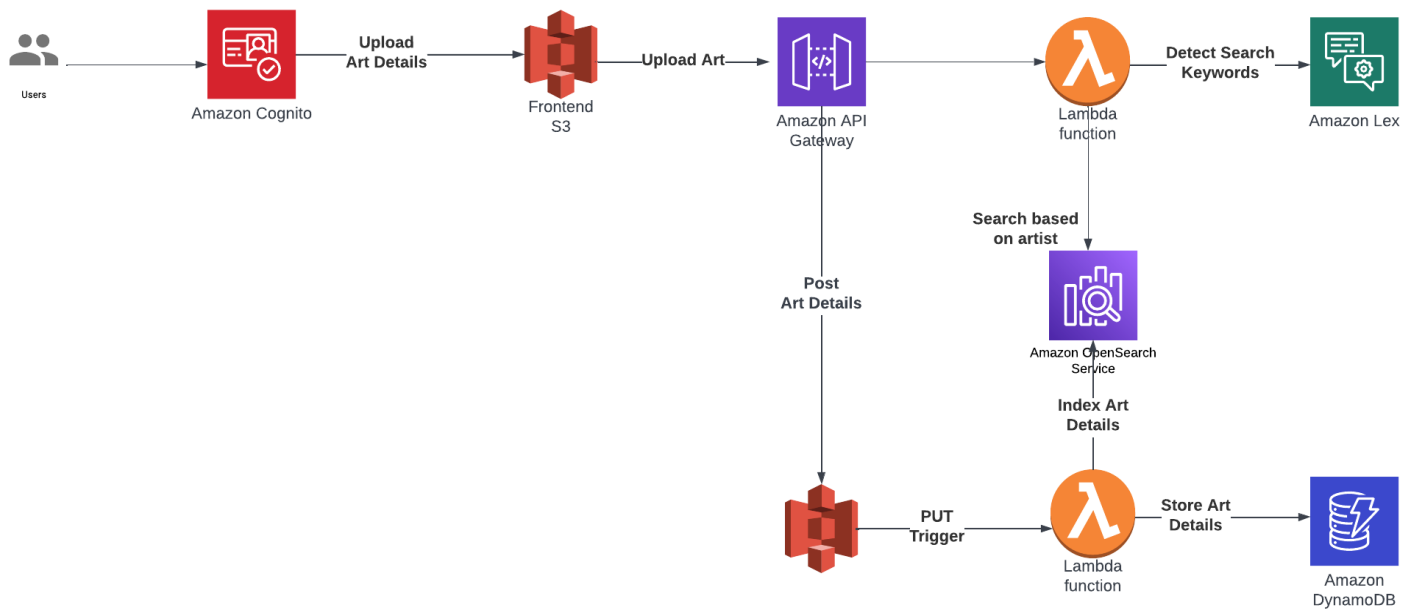


Figure: Store and Search Art pieces

## 4. Data Source used

<https://www.kaggle.com/datasets/ikarus777/best-artworks-of-all-time>

## 5. About the Model

For data augmentation we used ImageDataGenerator. Data augmentation will be used to increase the amount of data by adding slightly modified copies of already existing data or newly created synthetic data from existing data. It acts as a regularizer and helps reduce overfitting when training a machine learning model.

In this our objective is to identify the artist from the images and not the object detection. Because of that for the model training we are using Convolution Neural Network with Resnet50 architecture. Resnet50 helps us to load a version of the network trained on more than million images from the ImageNet database.

For optimization we are using Adam optimization with a learning rate of 0.0001 which is a stochastic gradient descent method that is based on adaptive estimation of first-order and second-order moments. For loss we used categorical\_crossentropy.

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## 6. Model Performance

For finding out the model performance we plotted the confusion matrix. Overall the final model could identify the artists with an approximate accuracy of 99% on the training set and 85% on cross-validation.

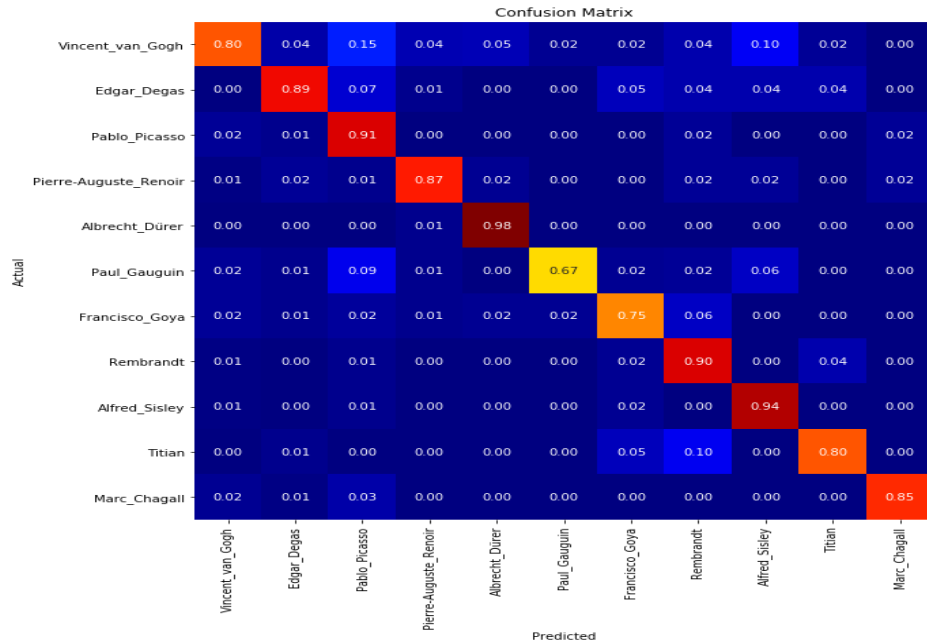


Figure: Model Performance

Classification Report:

	precision	recall	f1-score	support
Vincent_van_Gogh	0.89	0.80	0.84	174
Edgar_Degas	0.88	0.89	0.88	140
Pablo_Picasso	0.69	0.91	0.78	86
Pierre-Auguste_Renoir	0.89	0.87	0.88	67
Albrecht_Dürer	0.93	0.98	0.96	65
Paul_Gauguin	0.95	0.67	0.78	60
Francisco_Goya	0.81	0.75	0.78	57
Rembrandt	0.76	0.90	0.82	52
Alfred_Sisley	0.81	0.94	0.87	49
Titian	0.89	0.80	0.85	51
Marc_Chagall	0.95	0.85	0.90	47
accuracy			0.85	848
macro avg	0.86	0.85	0.85	848
weighted avg	0.86	0.85	0.85	848

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## 7. Application Screenshots

- Search based on Artist name

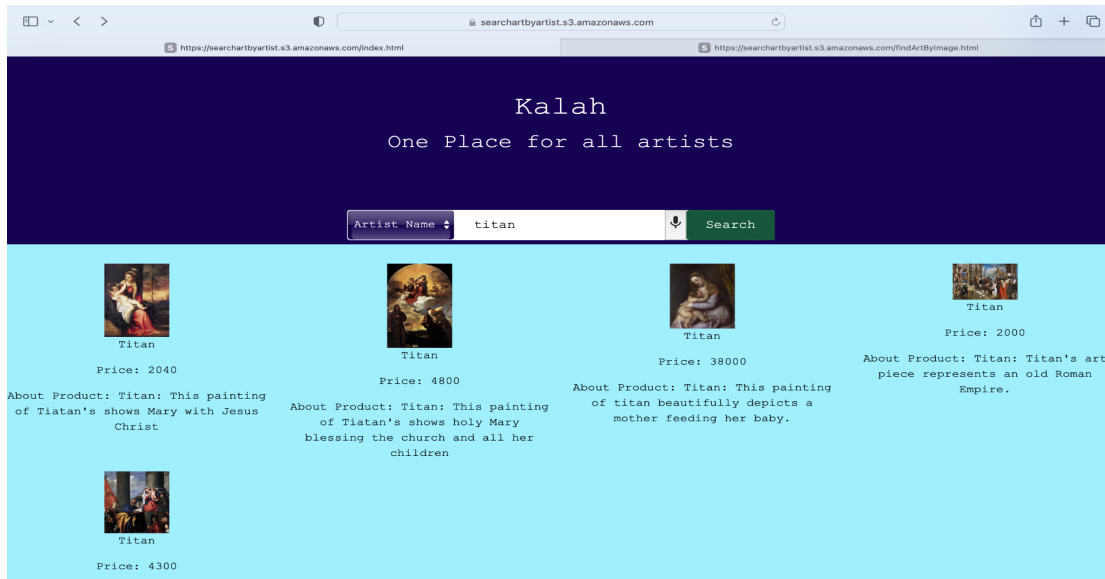


Figure: Search based on Artist name

- Search based on Artist Description

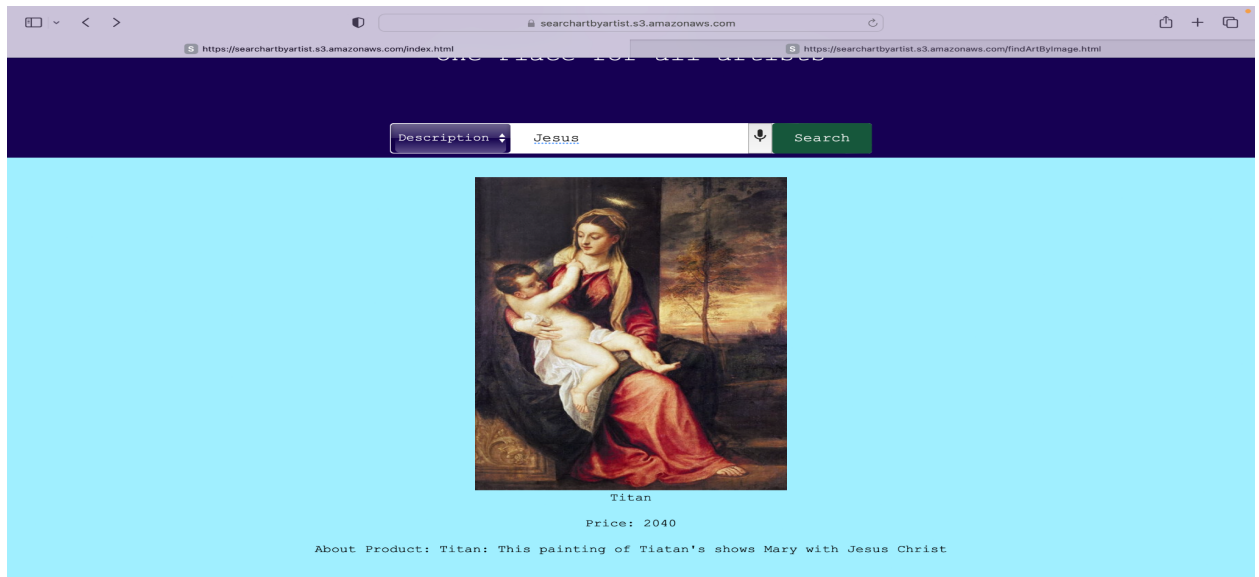


Figure: Search based on Artist Prediction

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- Upload Art Piece

The screenshot shows a web browser with the URL `searchartbyartist.s3.amazonaws.com`. The page has a dark blue header with the text "Kalah" and "One Place for all artists". Below the header, the main content area is light blue. It features a form titled "Upload Photos and give custom labels if any". The form includes a "Choose File" button, a text input field for "Artist description", a text input field for "Custom labels", a text input field for "100" (labeled "Enter price of the artist"), and a text input field for "Enter artist name". There is an "Upload Photo" button at the bottom of the form. At the bottom of the page, there are two buttons: "Search Arts" and "Check Artist".

Figure: Search based on Artist Piece

- Find Artist From Image

The screenshot shows a web browser with the URL `searchartbyartist.s3.amazonaws.com`. The page has a dark blue header with the text "Kalah" and "Find artist from art piece". Below the header, the main content area is light blue. It features a form titled "Upload Photo to identify artist". The form includes a "Choose File" button, a text input field for "Pablo\_Pic\_14635.jpg", and a text input field for "Upload this image?". There is a button labeled "Upload Art For Prediction". Below the button, the text "Image Uploaded !!!" is displayed. At the bottom of the form, the text "The predicted artist is: Pablo Picasso, prediction probability is: 87.31%" is shown. At the bottom of the page, there are two buttons: "Search Arts" and "Check Artist".

Figure: Find Art from Image

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## 8. Demo Link

[https://drive.google.com/drive/folders/1bw1VH1w7UKaXCU0fETGFLqrgsg\\_ziMDZ?usp=sharing](https://drive.google.com/drive/folders/1bw1VH1w7UKaXCU0fETGFLqrgsg_ziMDZ?usp=sharing)

## 9. Code Repository:

<https://github.com/mohit-purnani/kalah>

## 10. Presentation:

 Cloud Presentation