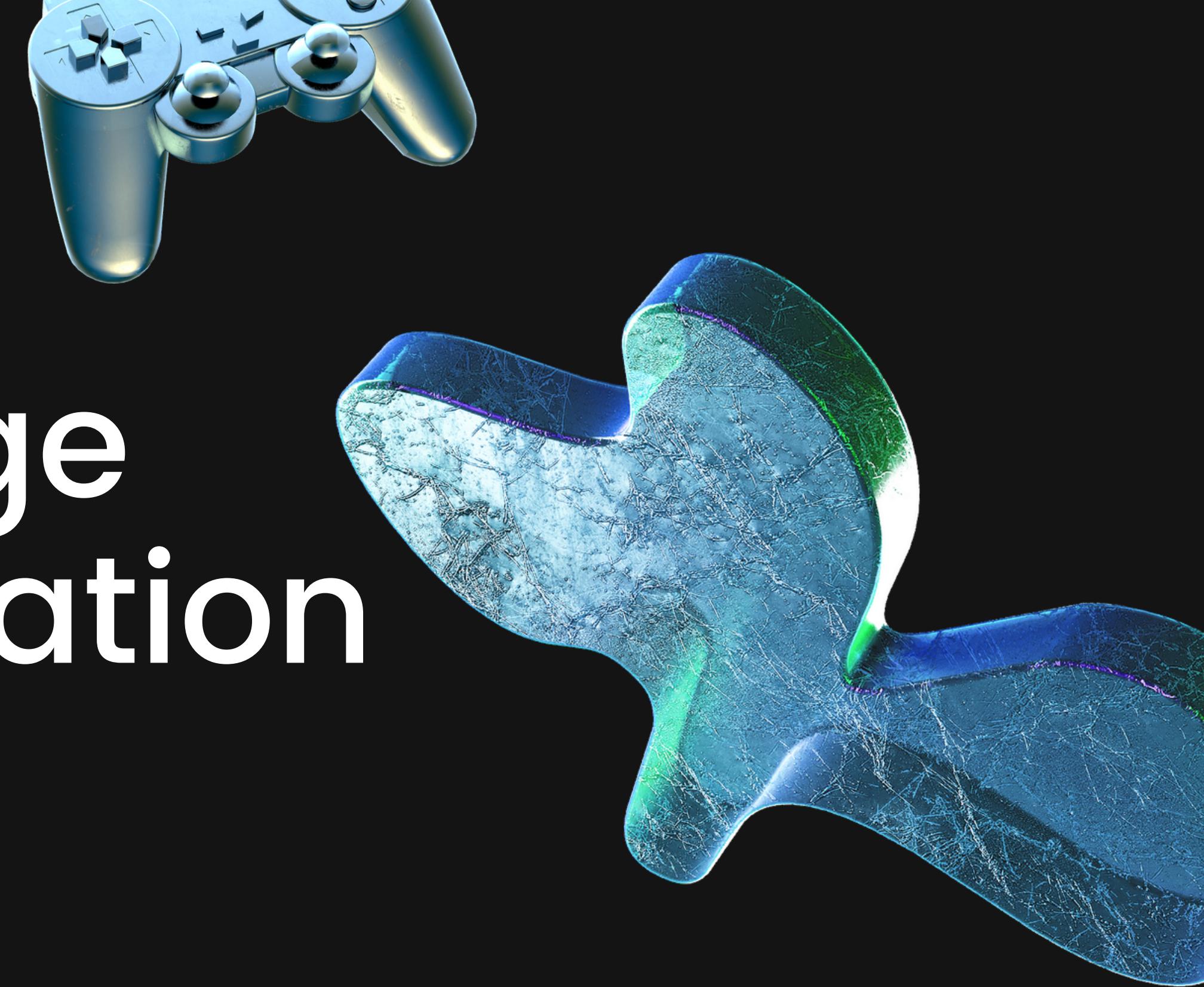


NMIMS Hackathon
Project Report 2023

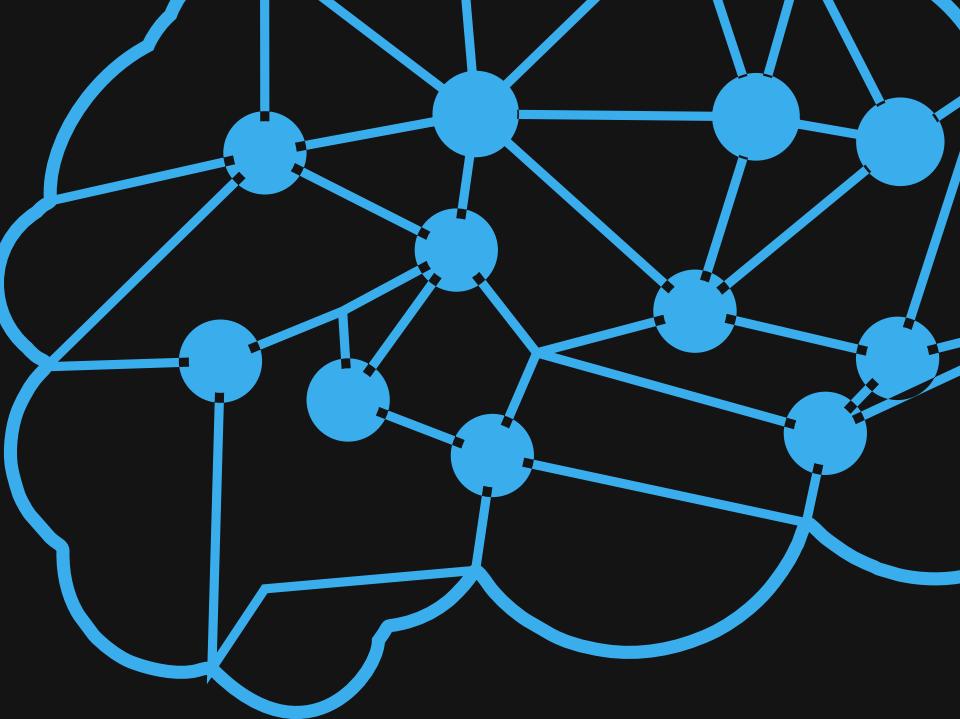
Fashion Image Recommendation System

A fully functional Fashion category and pattern-recognizing system developed in Python and integrated in Django Framework with precise Machine Learning Models.

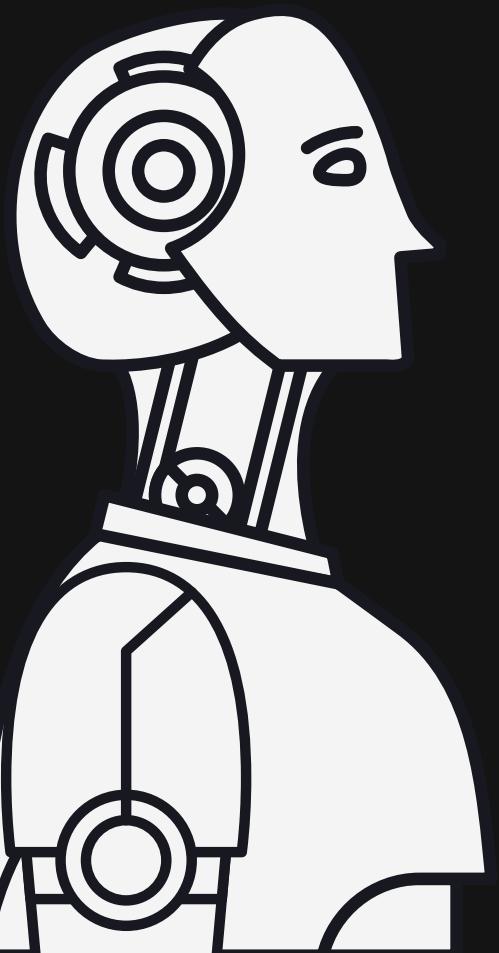


~ Team Tech Titans

Problem Statement Selected!



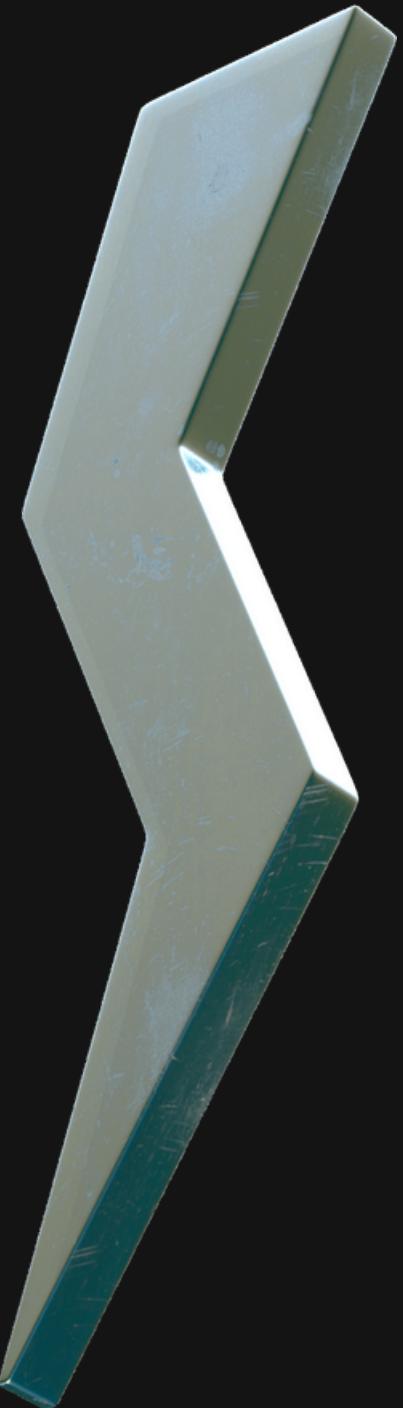
P3: // Effortlessly Elevate Your Fashion Game with the AI-Powered Clothing Recognition for Personalized Recommendations // picture. The solution should be able to detect the kind of garment, such as shirts, pants, gowns, etc., and make correct suggestions for related items. The solution should utilise open-source computer vision libraries, such as TensorFlow or OpenCV, to make development and integration with other applications simple. The solution should also provide an intuitive interface that enables users to post photographs and receive recommendations without difficulty



Concepts and Tasks

Implemented!

What we learnt ?



Creating clothing recognizing ML model

Using real-world data to make prediction on models!

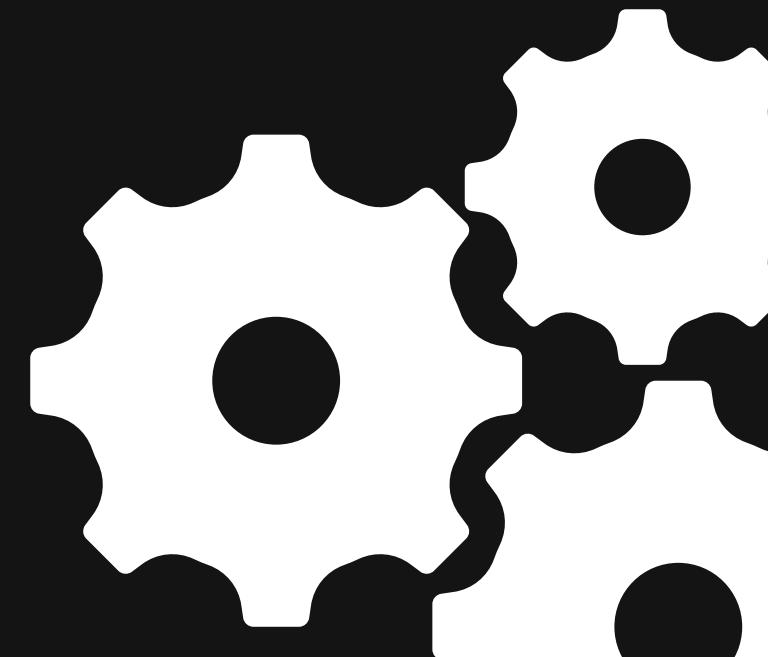
Creating an ML model to identify category and design patterns on clothing!

Creating a Django Web Application to show the capability of the model in practicality?

Integrating the model into the Django Web application ?

Using the Model's capabilities to make a real-world recommendations for the user !

Creating_Clothing_Recognizing ML Model:



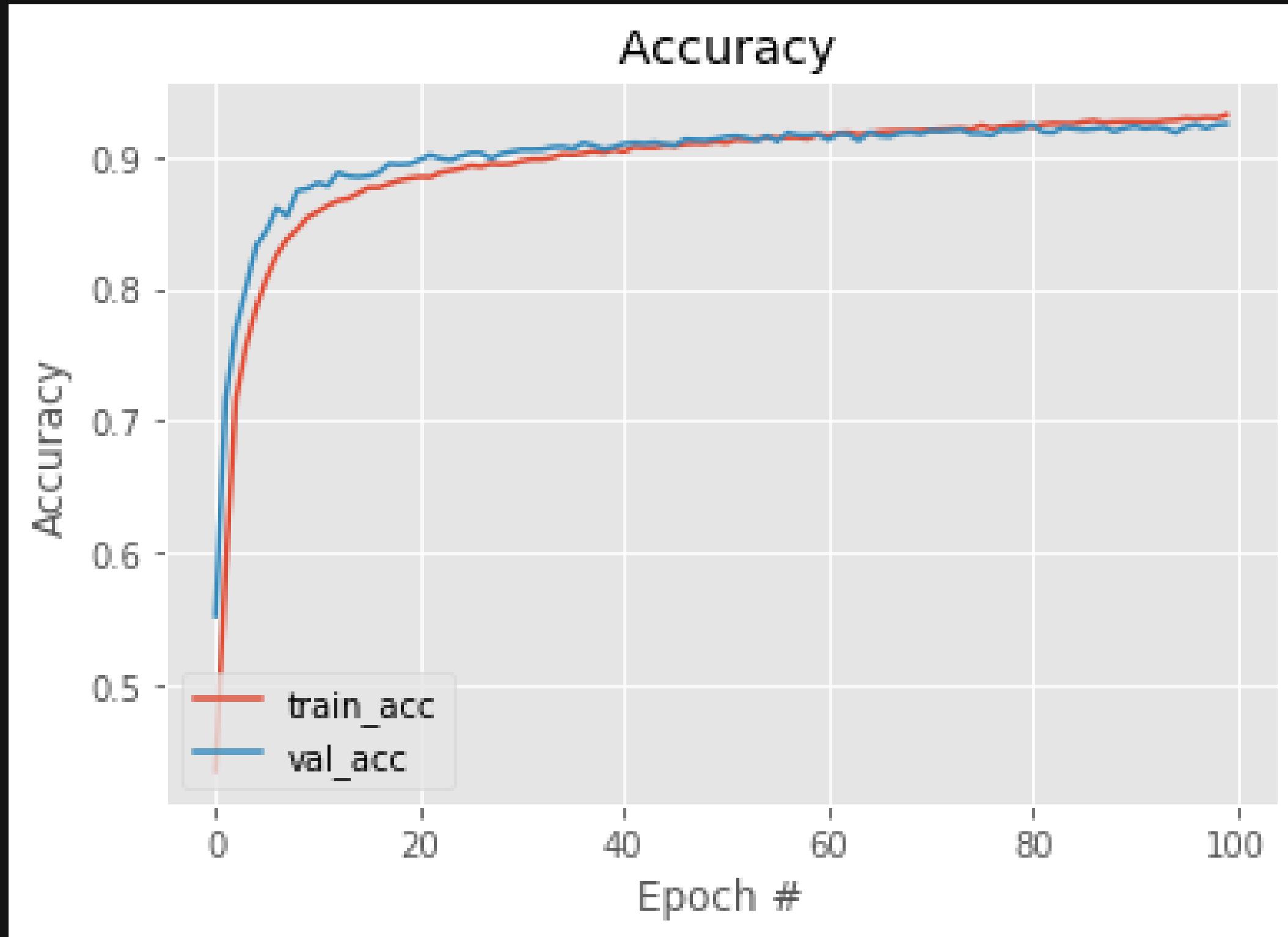
MINST FASHION DATA-SET

- The Fashion-MNIST dataset is a collection of images that are frequently used for testing computer vision and deep learning algorithms.
- The dataset consists of 70,000 images divided into 60,000 training images and 10,000 test images

Model Architecture

- Input layer/ Primary Layer.
- CNN layer to extract features of the image first layer has 32 filters with $3*3$ size.
- The second layer also a CNN layer which has 64 filters with size $3*3$, both layers used relu activation function.
- Model runs for 100 epochs with an accuracy of 92.4%.

Graphical Representation of Training and Value Accuracy.



Using Real-World Data to Make Prediction on Models?

- Preprocessing the data,
- Converting data to grayscale,
- Converting image to array,
- Dividing or subtracting from 255 to process over smaller values,
- Adding a extra dimension to the array for a reason that only batch processing can be done from the Neural Network.

Creating a Django Web Application
to Showcase the Capabilities of
Model in Real-World Application!

Using Real-World Data to Make Prediction on Models?

- Made an intuitive interface that enables users to easily upload photos and receive recommendations without difficulty.
- Provides personalized recommendations that match user's style and preferences.
- This system can accurately identify the type of garment, provide suggestions for related items, thereby improving the shopping experience for users.

Database Models in Django

The screenshot shows a code editor interface with multiple tabs at the top. The active tab is 'models.py 2'. Below the tabs, the file structure is shown as 'fashion_titans > models.py > recmd'. The code itself defines two Django models:

```
9
10 class recmd(models.Model):
11     pattern=models.CharField(max_length=50,default="foobar" )
12     predection=models.CharField(max_length=50 ,default="foobar")
13     img = models.ImageField(upload_to='images/')
14     def __str__(self):
15         return self.predection
16
17 class Category(models.Model):
18     title = models.CharField(max_length=100)
19     category = models.CharField(max_length=120)
20     img = models.ImageField(upload_to = upload_path_category, height_field=None, width_field=None, blank=T
21     desc = models.TextField(null=True)
22     created_at = models.DateTimeField(auto_now_add=True)
23
24     def __str__(self):
25         return self.title
```

Home Page

Home Products Recommendations Search Products Search

FASHION TITANS

Welcome! Get all products under one platform.



< >



Home Page

 Home

 Products

 Recommendations

Search Products

 Search

Upload Your Custom Picture

No file chosen

 Upload

Upload image of your requirements and get personalized experienced with our tool!

Our Vision

Our Mission

Home Page

 Home  Products  Recommendations  Search

Fashion Titans

Labore dolor amet ipsum ea, erat sit ipsum duo eos. Volup amet ea dolor et magna dolor, elitr rebum duo est sed diam elitr. Stet elitr stet diam duo eos rebum ipsum diam ipsum elitr.

© www.fashontitans.com. All Rights Reserved. Designed by [The Tech Titans Pvt. Ltd.](#)

Get In Touch

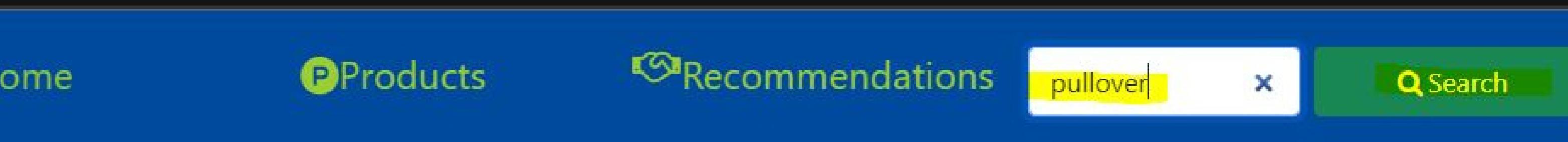
 123 Street, New York, USA
 info@example.com
 +012 345 67890

Quick Links

 [Home](#)
 [Products](#)

Web Application with
High Performance Search
Functionalities!

Search Page



FASHION TITANS

Search Page

Home Products Recommendations Search Products Search

FASHION TITANS

----- Your search Results -----

Categories Available



Search Page

Home Products Recommendations Search Products Search



Pullover Type 1
Trial Lorem, ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.

Pullover Type 2
Trial Lorem, ipsum dolor sit amet

Pullover Type 3
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Integrating the ML Model in Django Web Application!

PROJ

models.py 2

tests.py

urls.py 3

views.py 5

> media

ML_models

> __pycache__

> My_Fashion_MNist_model

FASHION-MNNIST-SGD.model

floral.jpg

ii.jpg

images.jpg

jeans.jpg

jeans1.jpg

main.py

main1.py 9+

model.h5

{} model.json

shirt2.jpg

shirt45.jpg

shoe1.jpg

tshirt.jpg

> static

ML_models > main1.py > predimage

```
48 #test /= 255
49 result = model.predict(test,batch_size = BS)
50 y_class = result.argmax(axis=1)
51 result = (result*100)
52 result = list(np.around(np.array(result),1))
53 i = y_class[0]
54 s = result[0][i]
55 plt.text(1, 1,y[i],size=30,color='red', horizontalalignment='left',verticalalignment='top')
56 plt.text(0.5, 0.5,s,size=25,color='green',horizontalalignment='right',verticalalignment='bottom')
57 plt.imshow(image)
58 print(result)
59 print(y[i])
60 return(y[i])
61
62 # predimage('./shoe1.jpg',label_names)
```

PROBLEMS 29 OUTPUT DEBUG CONSOLE TERMINAL

C:\ python + -

```
[array([ 2.8,  0.2,  1.6,  0.8, 10.6,  0.2, 66.4,  0.5, 16.9,  0.1],
      dtype=float32)]
Shirt
images/shoe1.jpg
./media/images/shoe1.jpg
1/1 [=====] - 0s 18ms/step
[array([ 0. ,  0. ,  0. ,  0. ,  0. , 24.6,  0. , 75.1,  0. ,  0.3],
      dtype=float32)]
Shoes
['Shirt', 'Shoes']
[19/Mar/2023 16:20:01] "GET /categories/ HTTP/1.1" 200 17816
```

Using the Model's Capabilities
to Make a Practical
Recommendation System for
the Users !

All Products Page

- Dynamically uploaded 45 trial images for 9 different categories .

The screenshot displays a web page for 'FASHION TITANS'. At the top, there is a navigation bar with icons for Home, Products, Recommendations, a search bar labeled 'Search Products', and a green 'Search' button. Below the navigation bar, the text 'FASHION TITANS' is prominently displayed in large blue letters. Underneath, the text 'Get Variety of Products' is shown with 'Variety' underlined. Five product categories are displayed in a row, each featuring a male model wearing a shirt and a brief description below it.

Image	Product Name	Description
	Plain Black Shirt	Trial Lorem, ipsum dolor sit amet consectetur
	Plain White Shirt	Trial Lorem, ipsum dolor sit amet consectetur
	Checks Shirt	Trial Lorem, ipsum dolor sit amet consectetur
	White Checks Shirt	Trial Lorem, ipsum dolor sit amet consectetur
	Geometry Shirts	Trial Lorem, ipsum dolor sit amet consectetur

All Products Page

- Dynamically uploaded 45 trial images for 9 different categories .

Home Products Recommendations Search Products Search

<p>ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.</p>  <p>Black Skirt Dummy Text Lorem, ipsum dolor sit amet consectetur adipisicing</p>	<p>ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.</p>  <p>Patterned Skirt Trial Lorem, ipsum dolor sit amet consectetur adipisicing elit.</p>	<p>ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.</p>  <p>Long Skirt Dummy Text Lorem, ipsum dolor sit amet consectetur adipisicing</p>	<p>sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.</p>  <p>Black Skirt Dummy Text Lorem, ipsum dolor sit amet consectetur adipisicing</p>	<p>ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quos rerum eos iste reprehenderit id! Saepe.</p>  <p>Floral Skirt Trial Lorem, ipsum dolor sit amet consectetur adipisicing elit.</p>
---	--	--	---	---

Get Ready to Witness the
Capabilities of Our ML Model for
any Fashion Industry!

Recommendation Page

- Uploading the Desired Picture for getting recommendations.

The screenshot shows a web application interface for uploading a custom picture. At the top, there is a navigation bar with links for Home, Products, Recommendations, a search bar labeled "Search Products", and a green "Search" button. Below the navigation bar, the main content area features a heading "Upload Your Custom Picture". Underneath this, there is a file input field with the placeholder "Choose File No file chosen" and a green "Upload" button. A descriptive text below the input field reads "Upload image of your requirements and get personalized experienced with our tool!". A file selection dialog box is overlaid on the page, titled "Open". It shows a file tree on the left with "This PC", "3D Objects", "Desktop", "Documents", and "Downloads". Inside the tree, three files are listed: "shirt2" (a black and white checkered shirt), "shoe1" (a black and white sneaker), and "tshirt3" (a blue t-shirt). The "tshirt3" file is currently selected. At the bottom of the dialog, there is a "File name:" dropdown set to "tshirt3", a "Cancel" button, and an "Open" button which is highlighted with a blue border. To the right of the dialog, there is a section titled "Our Mission" featuring a circular arrow icon.

Recommendation Page

- Picture Uploaded.

Upload Your Custom Picture

Choose File

tshirt3.jpg

 Upload

Upload image of your requirements and get personalized experienced with our tool!

Recommendation Page

- The originally uploaded image is also being shown.

Home Products Recommendations Search Products Search

Original Uploaded Images

These are the original custom pictures uploaded by user including pictures from anywhere around the net and also extended to snipping real pictures from camera! It also works for any number of uploaded products.



Recomended Products

Recommendation Page

- ML Model showing recommendations for all the desired uploaded pictures.

The screenshot displays a user interface for a recommendation system. At the top, there is a navigation bar with four items: "Home" (with a house icon), "Products" (with a shopping cart icon), "Recommendations" (with a hand icon), and a search bar labeled "Search Products". To the right of the search bar is a green "Search" button with a magnifying glass icon.

The main content area contains seven cards arranged in two rows. The top row contains three cards:

- Black Shoes**: An image of black athletic shoes. Below the image is the title "Black Shoes" and a placeholder text: "Trial Lorem, ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quo...". A yellow checkmark is drawn over the top-left corner of this card.
- Leather Shoes**: An image of dark leather dress shoes. Below the image is the title "Leather Shoes" and a placeholder text: "Dummy Text Lorem, ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quo...". A yellow checkmark is drawn over the top-left corner of this card.
- Cartoon Tshirt**: An image of a person wearing a black t-shirt with a cartoon logo and the word "GORKHA" printed on it. Below the image is the title "Cartoon Tshirt" and a placeholder text: "Trial Lorem, ipsum dolor sit amet consectetur adipisicing elit. Laboriosam voluptatum minus officia veritatis quo...". A yellow checkmark is drawn over the top-left corner of this card.

The bottom row contains three cards:

- A user profile picture of a young woman with curly hair, wearing a white t-shirt. A yellow checkmark is drawn over the top-left corner of this card.
- A user profile picture of a young man, wearing a blue t-shirt. A yellow checkmark is drawn over the top-left corner of this card.
- A user profile picture of a man with a beard and glasses, wearing a white t-shirt with a "Positivity" graphic. A yellow checkmark is drawn over the top-left corner of this card.

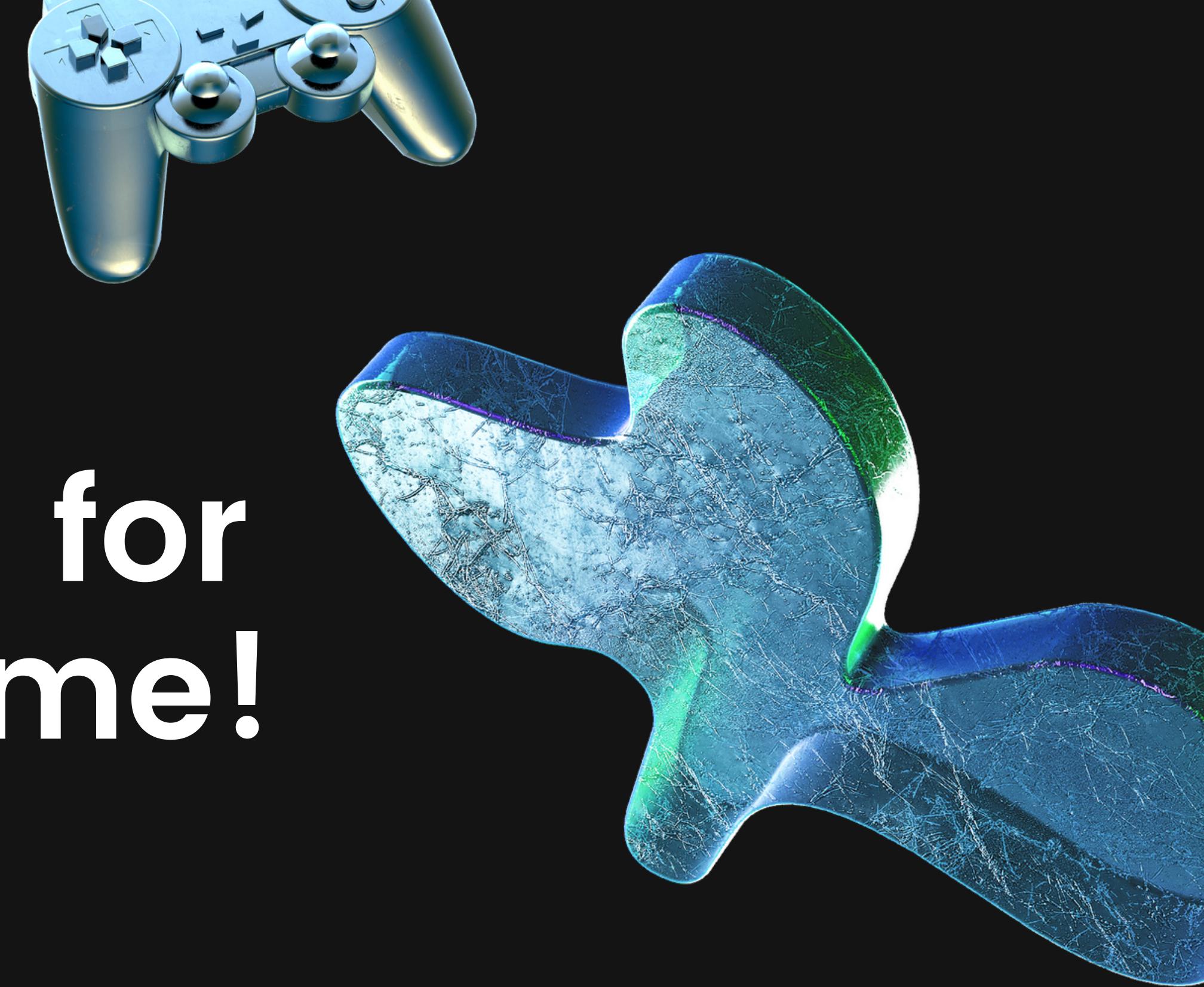
All Queries
are Welcomed!



NMIMS Hackathon Project Report 2023

Thank You All for Dedicating Time!

A fully functional Fashion category and pattern-recognizing system developed in Python and integrated in Django Framework with precise Machine Learning Models.



~ Team Tech Titans