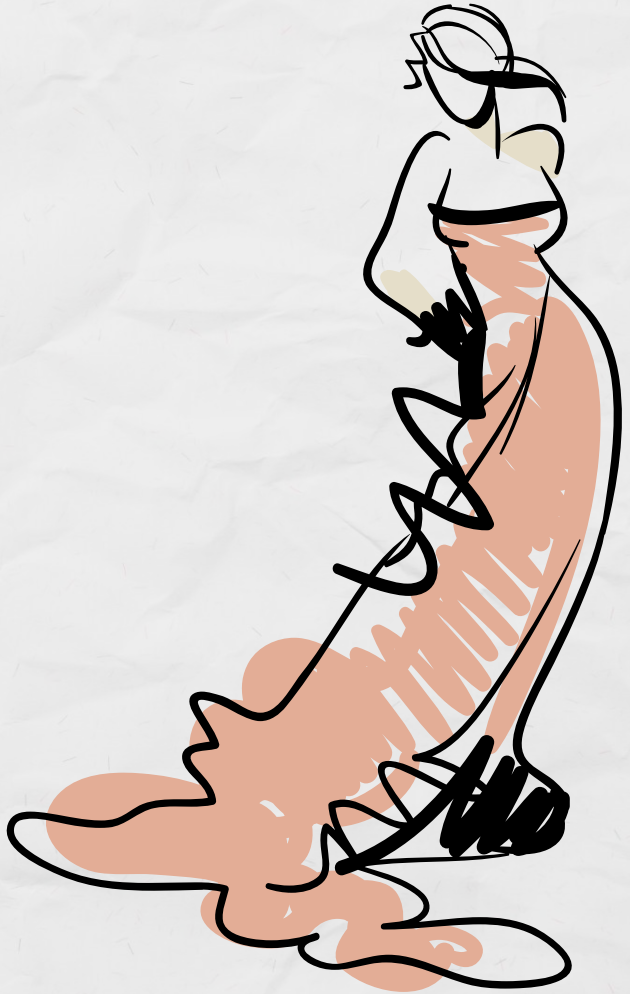
CLOTHES CLASSIFICATION USING CNN



GA – DSI 123 – GROUP 1

TABLE OF CONTENTS

01

PROBLEM STATEMENT

- The goal of this project is to accurately classify images into one of the following categories:

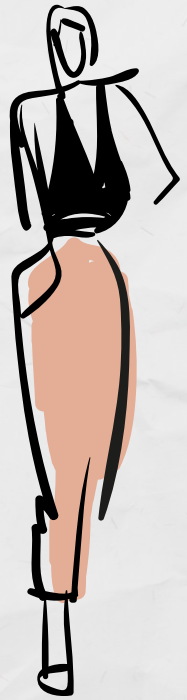
1. Trouser
2. Pullover
3. Dress
4. Coat
5. Sandal
6. Shirt
7. Sneaker
8. Bag
9. Ankle boot

- Using the model to predict the categories on new dataset.

02

DATA INSIGHTS

Dataset	FASHION MNIST Dataset
Train Size	60,000
Test Size	10,000
Number of Features	784
Predicting Variable	Clothes Categories
Image Size	28 x 28 pixels



03

MODELING

Data Preparation:

- Split into training and testing sets (0.8 / 0.2)
- The pixel values were MinMax scaled to improve the performance of the model

Model Building:

- A convolutional neural network (CNN) was built using Keras
- Two convolutional layers(64 and 128 nodes)
- Two pooling layers
- Two fully connected layers

Model Training:

- ❏ RMSProp optimizer
- ❏ Sparse categorical cross entropy loss function
- ❏ 10 epochs
- ❏ Batch size of 128

Model Evaluation:

- ❏ Model was evaluated on the testing set
- ❏ Accuracy was calculated

Model Improvement:

- ❑ Regularizing: EarlyStopping → 10 epochs
- ❑ BatchNormalization
- ❑ Increasing nodes
- ❑ Increasing layers
- ❑ Changing epochs

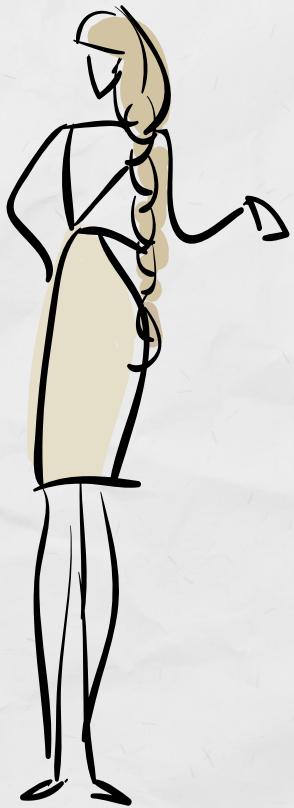
04

RESULTS

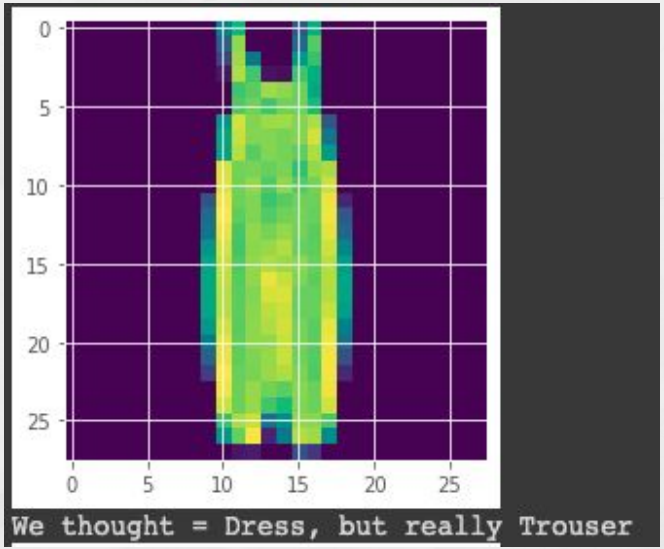
92%

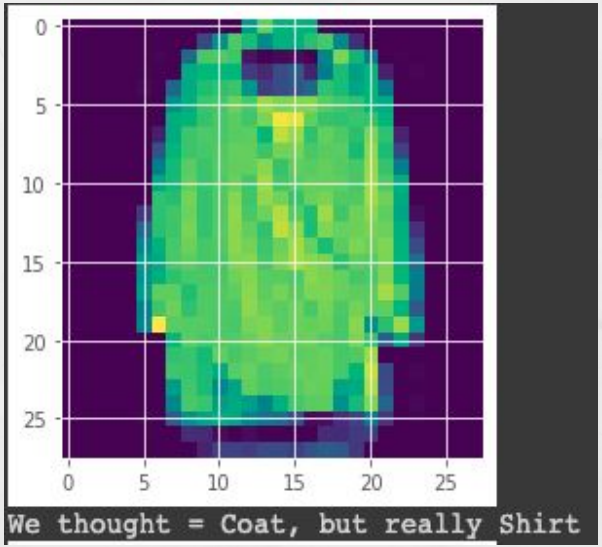
TEST ACCURACY

	precision	recall	f1-score	support
T-shirt	0.81	0.91	0.86	1180
Trouser	1.00	0.98	0.99	1211
Pullover	0.87	0.88	0.87	1178
Dress	0.90	0.94	0.92	1208
Coat	0.86	0.87	0.87	1222
Sandal	0.98	0.98	0.98	1199
Shirt	0.82	0.68	0.74	1171
Sneaker	0.96	0.97	0.97	1256
Bag	0.99	0.97	0.98	1201
Ankle boot	0.98	0.97	0.97	1174
accuracy			0.92	12000
macro avg	0.92	0.92	0.91	12000
weighted avg	0.92	0.92	0.92	12000

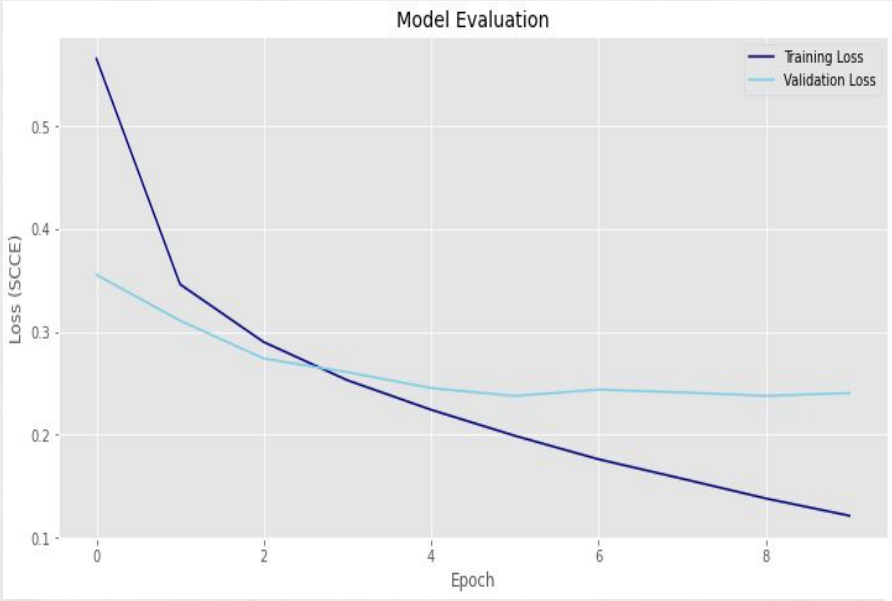


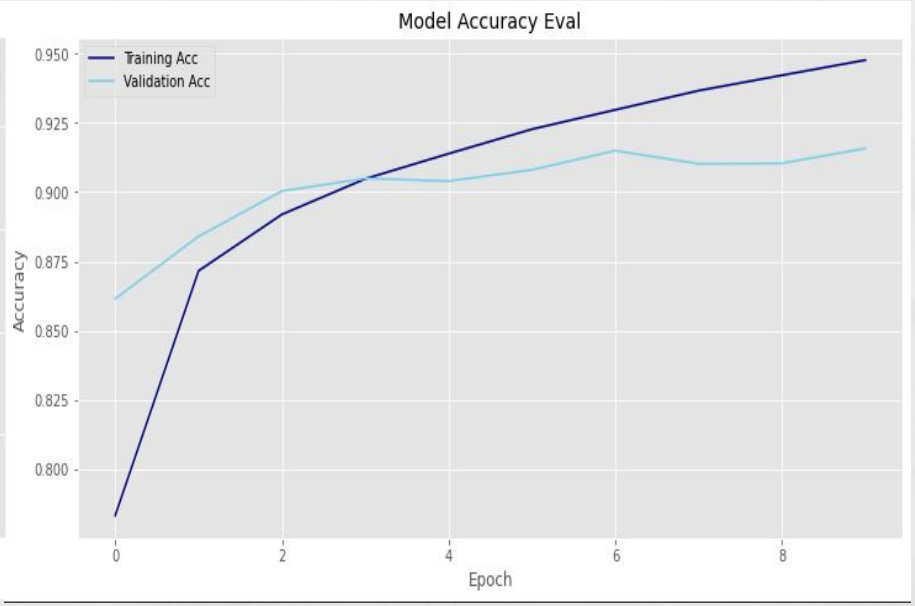
MISPREDICTION EXAMPLES





IMPORTANT RESULTS





05

RECOMMENDATIONS

- ❏ Use bigger dataset
- ❏ Attempt transfer learning with pretrained model
- ❏ Use higher resolution images
- ❏ Further tuning of parameters

THANKS

DO YOU HAVE ANY QUESTIONS?