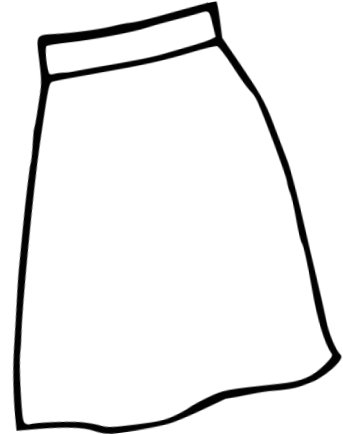


# Models That Explain Themselves

## Project 3









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# Dataset + Task + Model

- Fashion Product Images Dataset (images + product description)
- 2000 samples
- Classify what gender the clothes are targeted to: men/women (0/1)
- Class distribution: 0 (56.8%) + 1 (43.2%)
- Text: clothing\_subcategory\_classifier, fine-tuned version of DeBERTa
- Image: vit-base-clothing-leafs-example-full-simple\_highres, fine-tuned version of Vision Transformer (ViT) model

# Text + Image features

	Tops
	Dresses
	Other ot not specified
	Outerwear
	Swimwear
	Bottoms
	Activewear
	Sleepwear

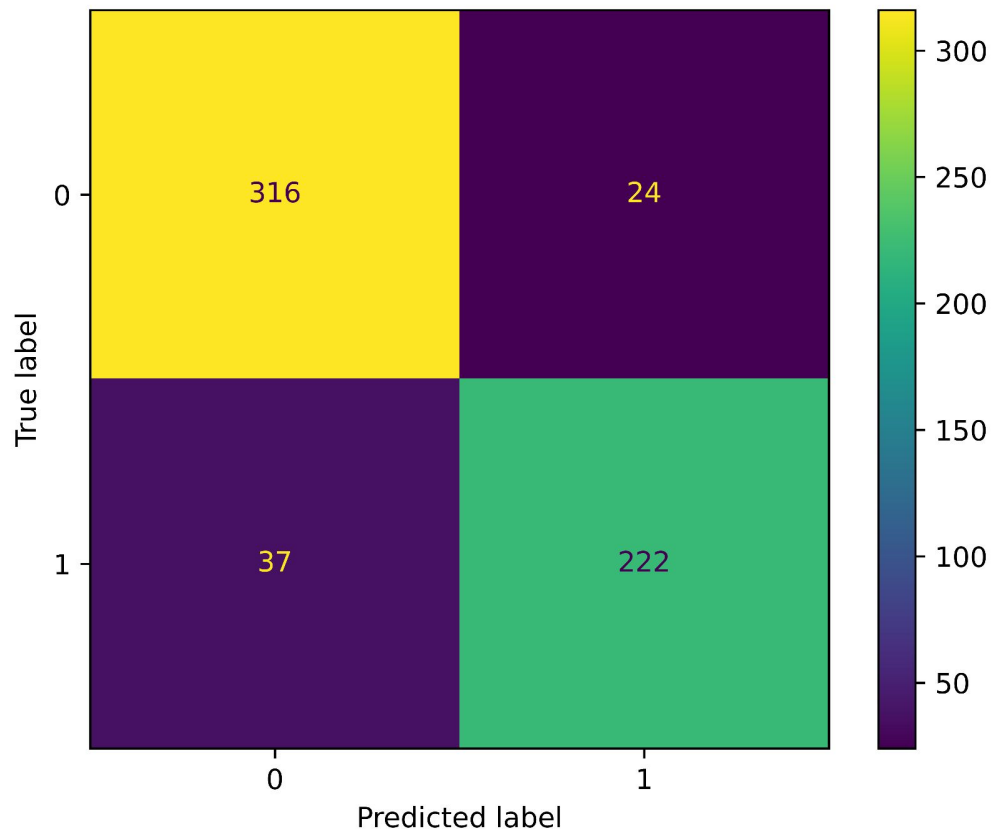
	Tee
	Jersey
	Tank
	Sweatpants
	Joggers
	Sweatshorts
	Romper
	Shorts
	Henley
	Jacket
	Blouse
	Sweater
	Hoodie
	Top
	Flannel

	Button-down
	Jeans
	Jeggings
	Trunks
	Leggings
	Cardigan
	Dress
	Jumpsuit
	Skirt
	Culottes
	Bomber
	Cutoffs
	Kimono
	Blazer
	Chinos
	Poncho

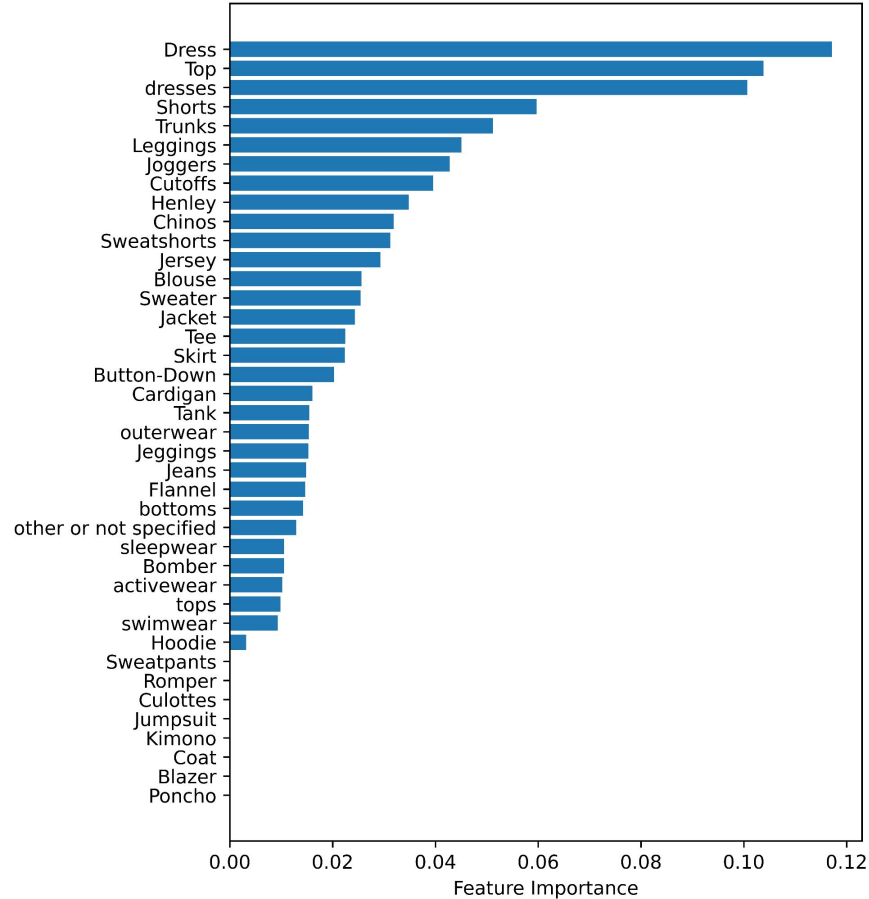
# Model performance

- Accuracy for only text features: **79.46%**
- Accuracy for only image features: **88.81%**
- Accuracy for both features: **89.81%**

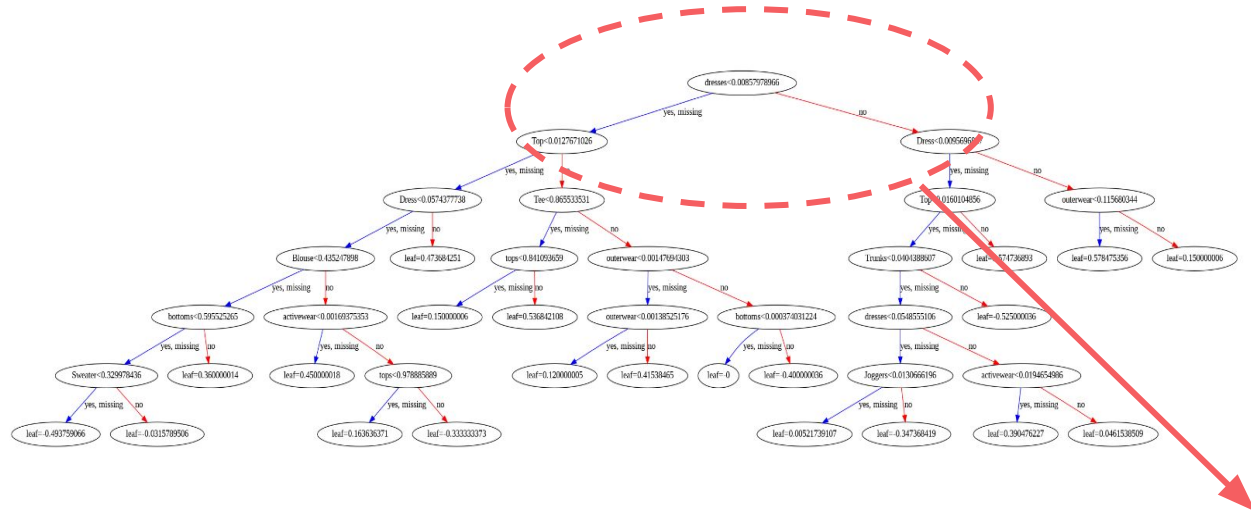
# Confusion Matrix (model with both modalities)



# Feature Importance



# Decision Tree



# Correctly classified sample 1

‘Reebok Navy Blue Polo T-shirt  
Fall Casual’

Feature	Probability
tops	0.994
Tee	0.821
Henley	0.081





# Correctly classified sample 1 (change in text)

‘Reebok Navy Blue Polo Fall  
Casual’

Feature	Probability
tops	0.956
Tee	0.821
Henley	0.081



# Correctly classified sample 2

‘Lotto White Collared Jacket Fall  
Sports’

Feature	Probability
tops	0.961
Tee	0.398
Jacket	0.130



# Correctly classified sample 2 (change in text + image)

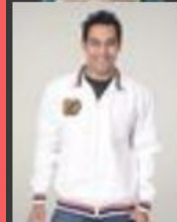
‘Lotto White Collared Fall’

Truth	Prediction
0	1
0	0
0	1
0	1

Invert colors



Mirror image



Invert + Mirror



Contour filter



# Incorrectly classified sample 1

‘Lee Blue Chicago Fit Jeans  
Summer Casual’

Feature	Probability
tops	0.854
Jeans	0.865
bottoms	0.025



# Incorrectly classified sample 2

'W Printed Purple Kurtas Fall  
Ethnic'

Feature	Probability
Dress	0.979
tops	0.847
dresses	0.042



# Mismatched sample 1

'Flying Machine Printed Navy  
Blue Sweatshirts Fall Casual'

- Actual label: 0
- Predicted label with both modalities: 1
- Predicted label with just text: 1
- Predicted label with just image: 0



# Mismatched sample 2

‘Jealous 21 Solid Pink Tops Fall Casual’

- Actual label: 1
- Predicted label with both modalities: 0
- Predicted label with just text: 1
- Predicted label with just image: 0



# Limitations and Learned Outcomes

- Choosing feature extraction models for our task
- Model performing quite well with image features