FASHION PREDICTION

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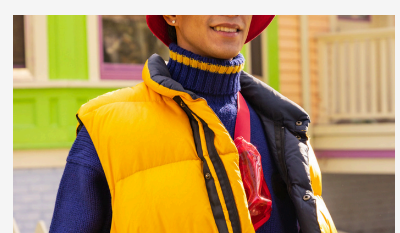
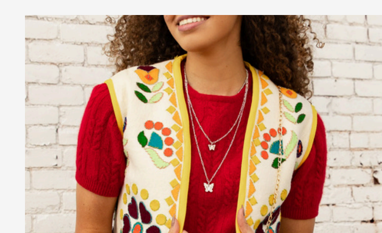
INTRODUCTION	MOTIVATION	SETTING STAGE	CORE ANALYSIS	CONCLUSION

Are you looking for an outer or even accessories that have streetwear style?
Look no other! We dedicated our ideas to getting you a perfect fit for daily activities!

About us

				
Bucket Hat	Long Knitwear	Sleeveless Puffer Jacket	Striped Long Shirt	Knitted Cardigan

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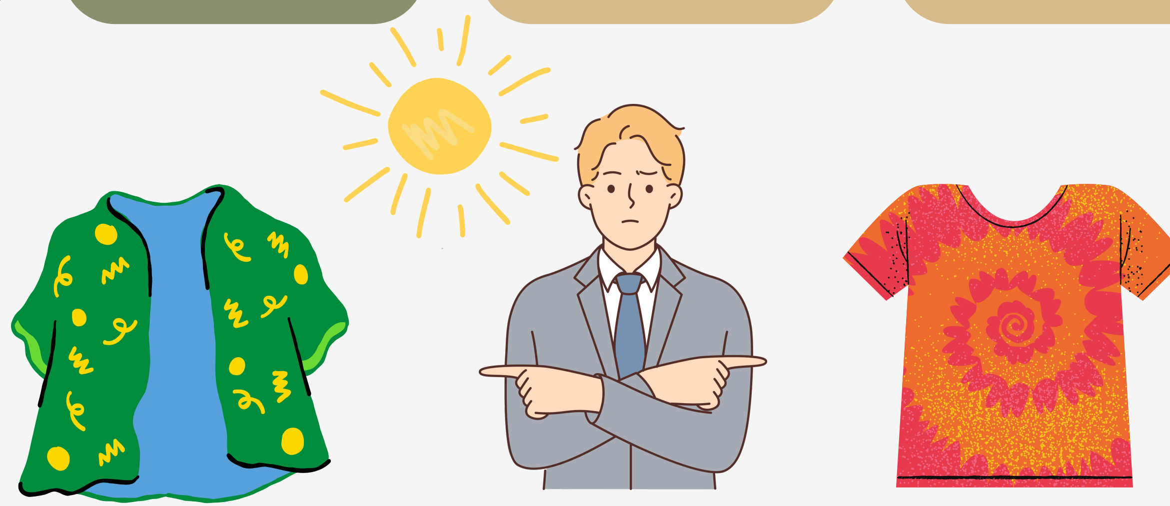
RITHIKA MURUGAN

PREDICTING COLOUR AND STYLE ATTRIBUTES IN THE FASHION INDUSTRY.

S. SHANTHOSH

AGE | PRICE | CATEGORY | COLOUR | RATING | STYLE ATTRIBUTE

WHAT WE AIM TO SOLVE



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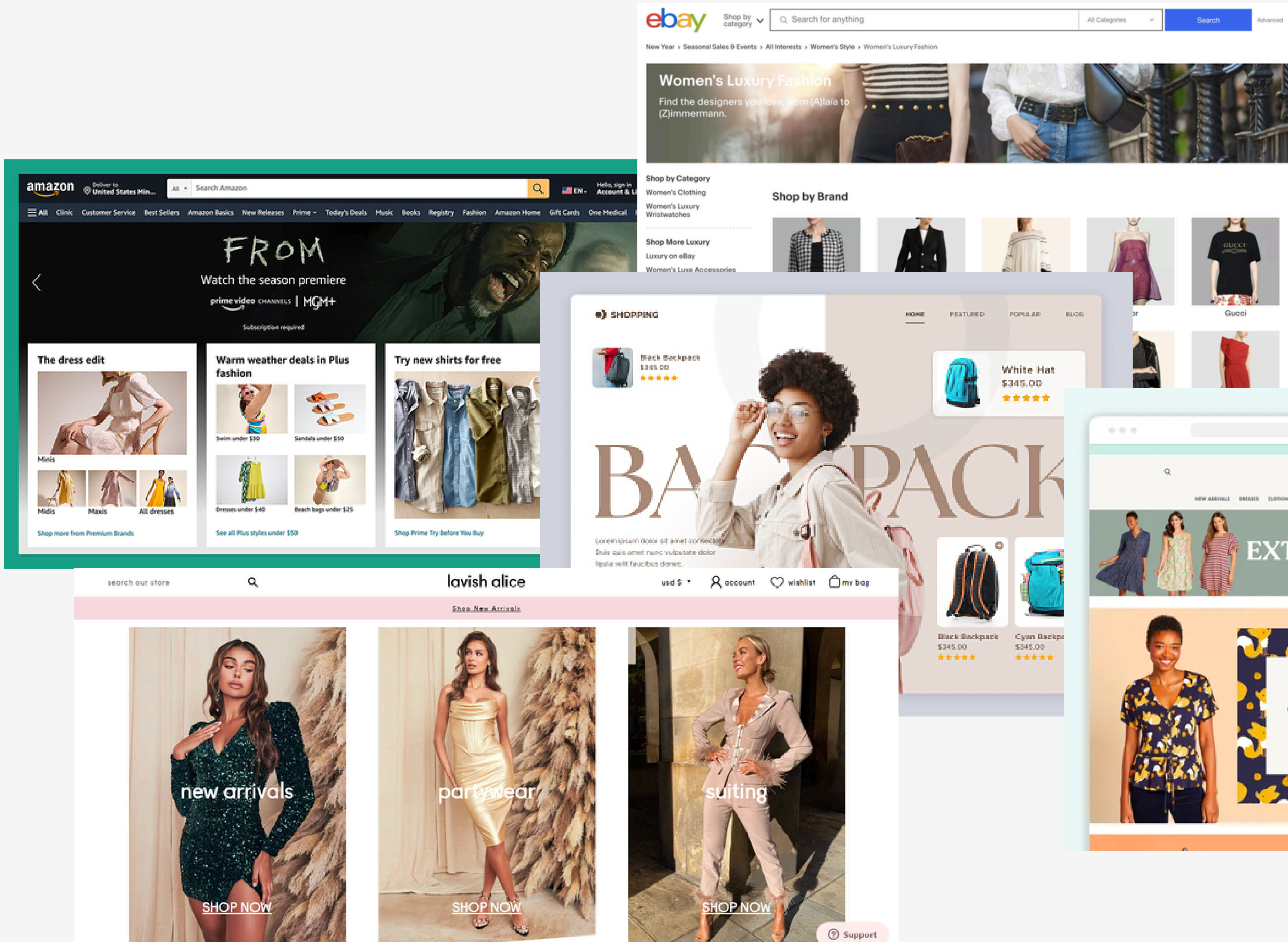
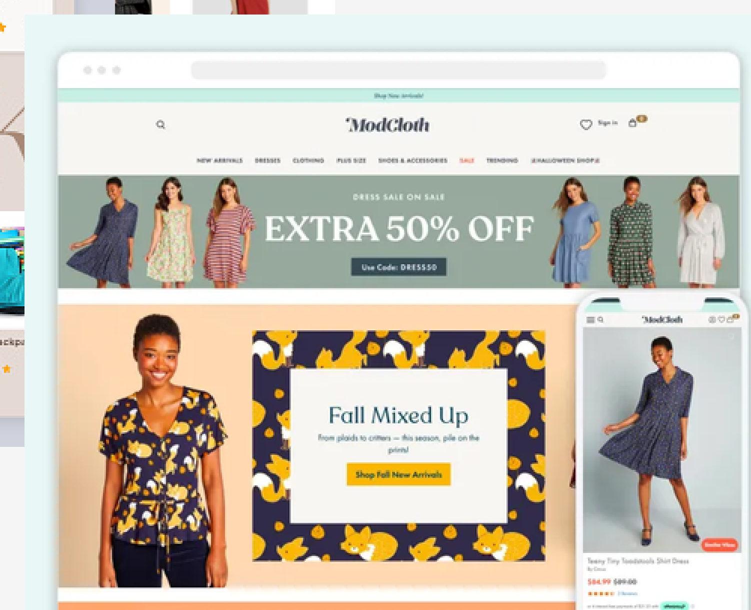
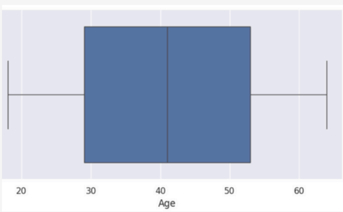


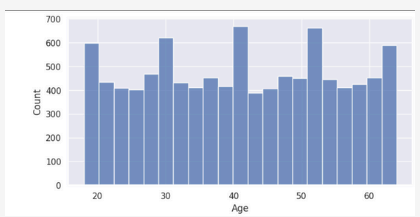


- GROWING IMPORTANCE OF DATA-DRIVEN DECISION-MAKING IN FASHION
- SHIFT TOWARDS ONLINE SHOPPING EMPHASIZES NEED FOR ACCURATE TREND PREDICTION
- GOAL: DEVELOP MACHINE LEARNING MODELS TO ASSIST IN PRODUCT DESIGN
- OBJECTIVE: INCREASE SUCCESS RATE OF FASHION PRODUCTS

```
#visualisation for numeric variables
#age
f, axes = plt.subplots(1, 2, figsize=(18, 4))
sb.boxplot(data = salesdata['Age'], orient = "h", ax = axes[0])
sb.histplot(data = salesdata['Age'], ax = axes[1])

<Axes: xlabel='Age', ylabel='Count'>
```

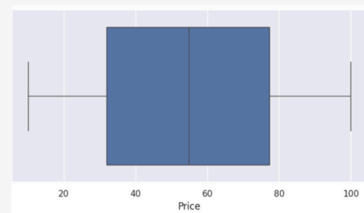


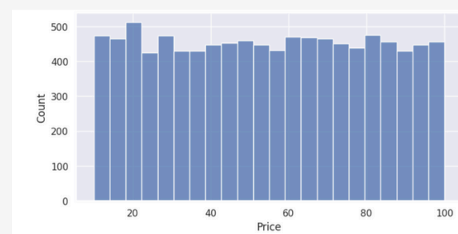


AGE OF ALL VARIABLES ARE FAIRLY DISTRIBUTED

```
#visualisation for Price
f, axes = plt.subplots(1, 2, figsize=(18, 4))
sb.boxplot(data = salesdata['Price'], orient = "h", ax = axes[0])
sb.histplot(data = salesdata['Price'], ax = axes[1])

<Axes: xlabel='Price', ylabel='Count'>
```

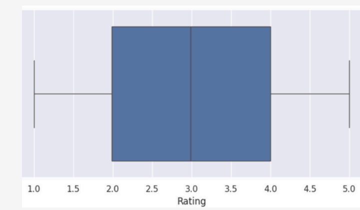


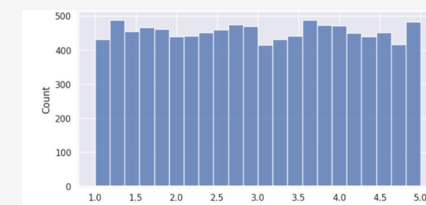


DEMAND FOR ALL PRICEPOINTS OF PRODUCTS.

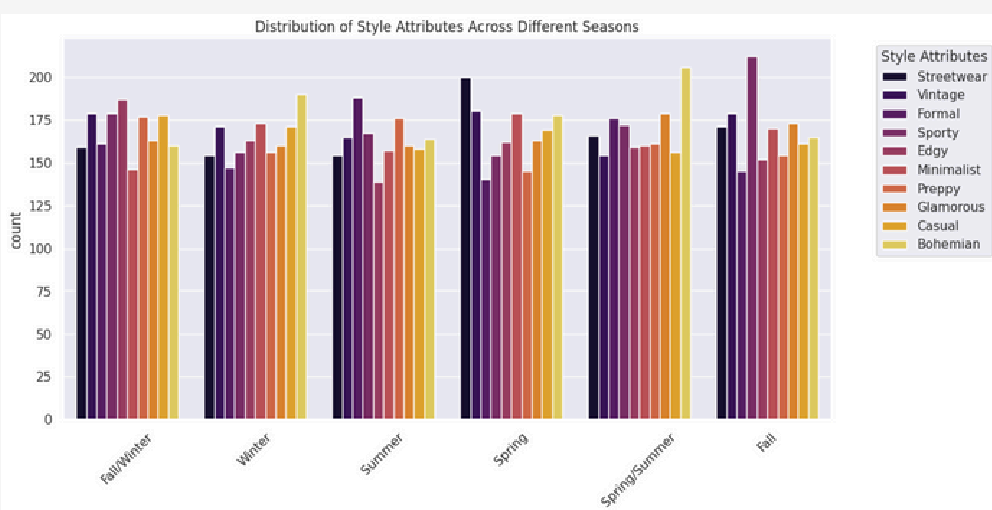
```
#visualization for rating
f, axes = plt.subplots(1, 2, figsize=(18, 4))
sb.boxplot(data = salesdata['Rating'], orient = "h", ax = axes[0])
sb.histplot(data = salesdata['Rating'], ax = axes[1])

<Axes: xlabel='Rating', ylabel='Count'>
```

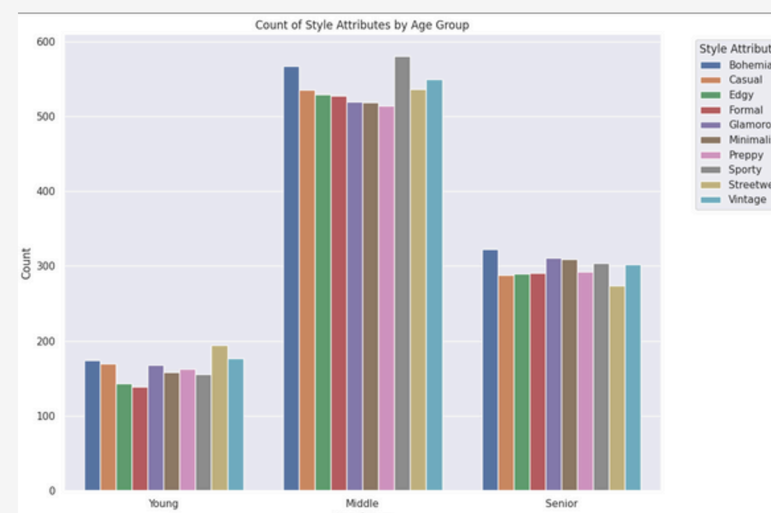




RATINGS ARE ALSO FAIR

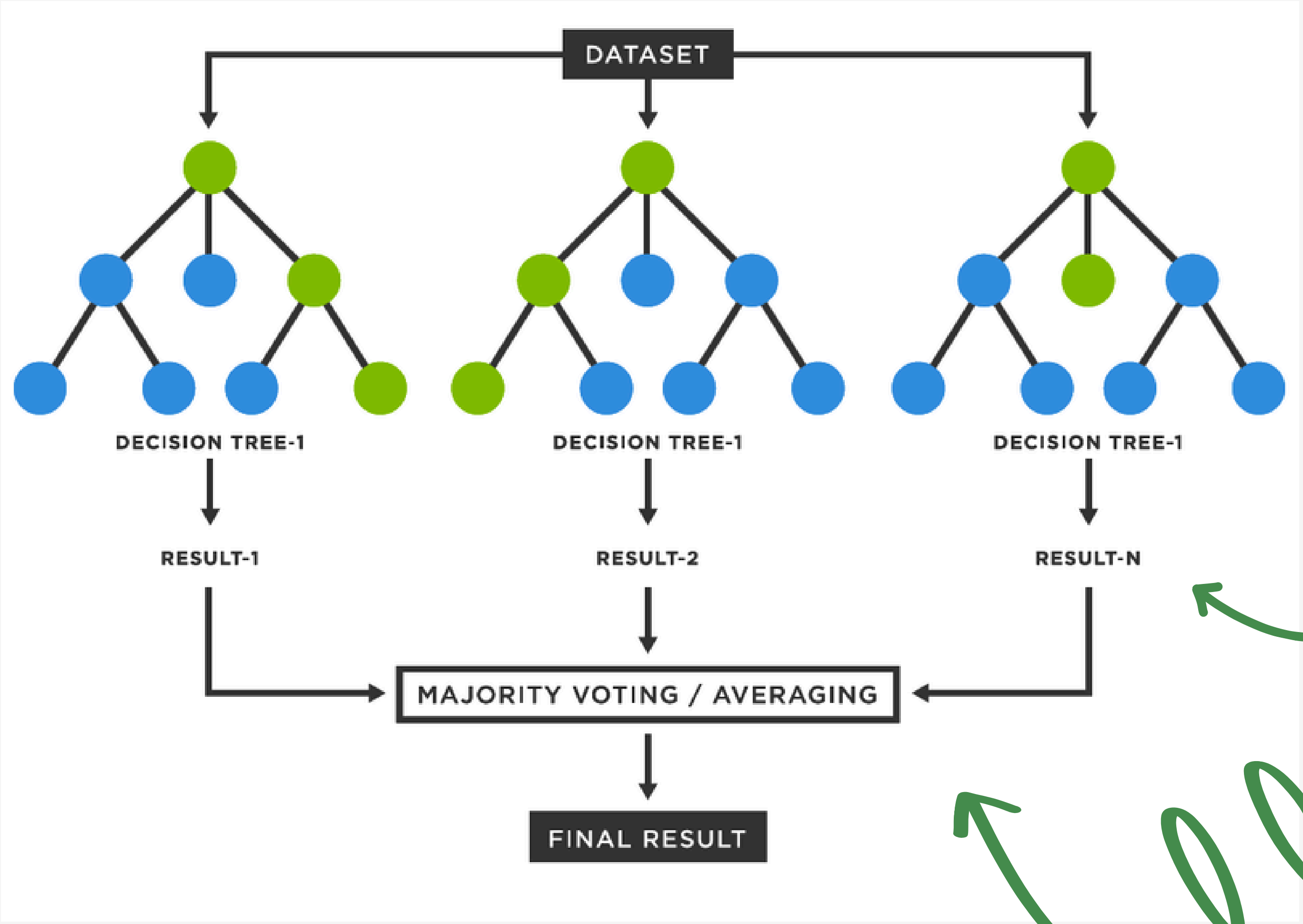


WITHIN SEASON



WITHIN AGE

RANDOM FOREST



CONSTRUCTS SEVERAL DECISION TREES

EACH TREE MAKES IT'S OWN PREDICTION

REDUCES ERRORS BY AGGREGATING PREDICTIONS FROM MULTIPLE TREES

FOR THE GENERAL MODEL

9.35%

AGE-BASED SPLIT

AGE-SPECIFIC VARIATIONS MIGHT NOT BE SUFFICIENTLY CAPTURED BY THE MODEL

```
Accuracy for age-based split: 8.68%
```

SEASON-BASED SPLIT

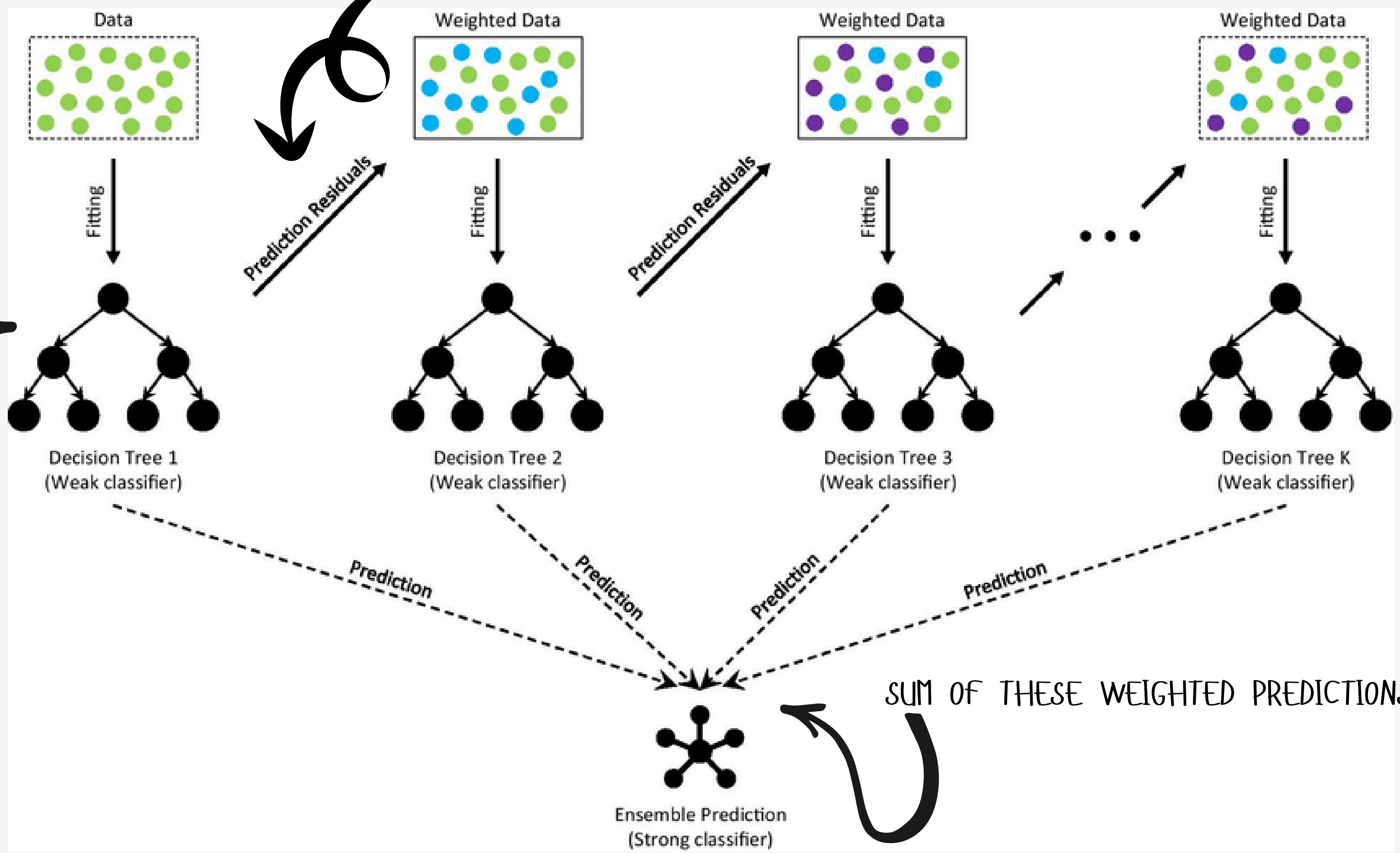
WHILE SEASONALITY IMPACTS STYLE, THE FEATURES AND THEIR INTERACTIONS CAPTURED BY THE RANDOM FOREST TREES MIGHT NOT ALIGN WELL

```
accuracy for Season-Based Split: 8.57%
```

GRADIENT BOOSTER

SUBSEQUENT MODELS FOCUS ON CORRECTING THESE ERRORS BY PREDICTING THE RESIDUALS

CALCULATES THE ERRORS (RESIDUALS)



SUM OF THESE WEIGHTED PREDICTIONS

PRICE

RATING

BRAND

CATEGORY

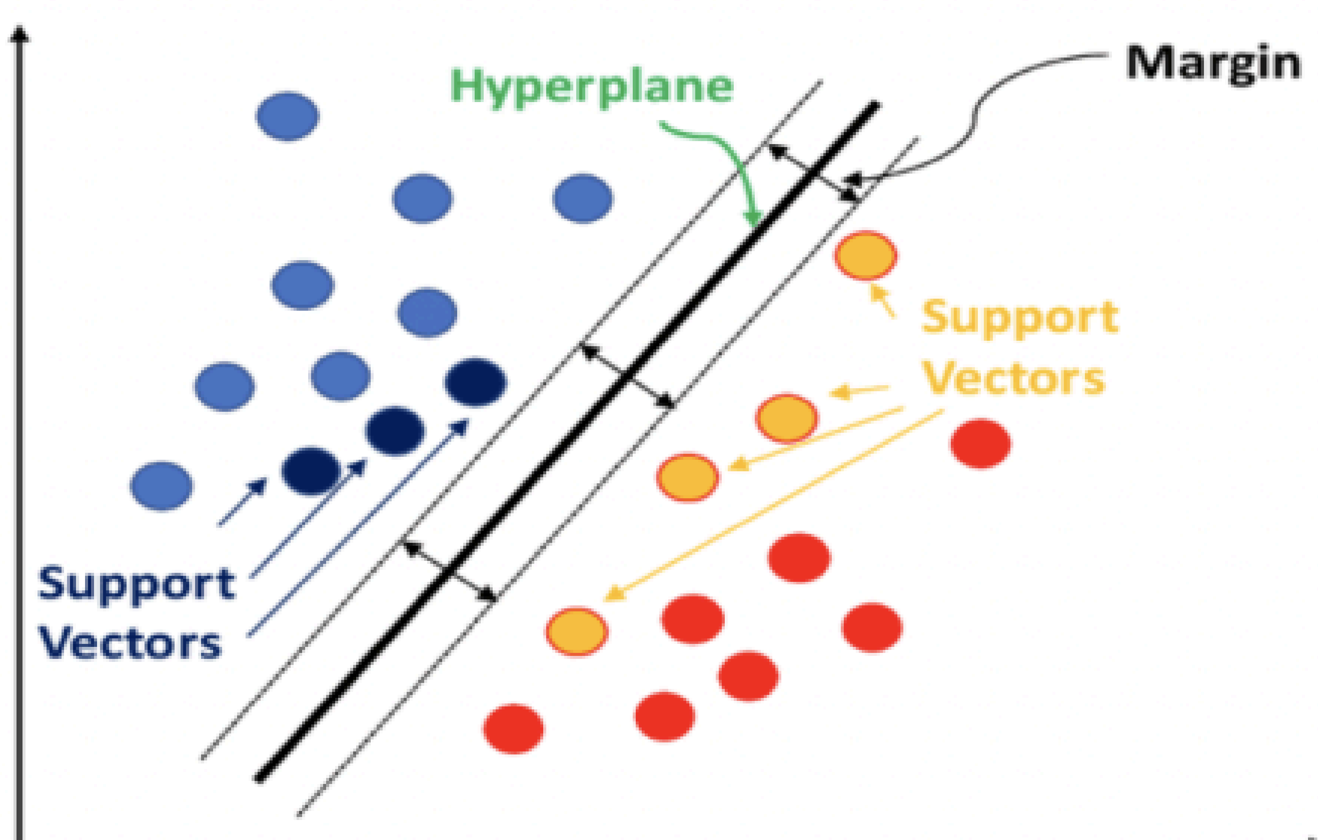
SEASON

9.85%

SPLIT THE DATASET BY AGE AND SEASON

10%

SUPPORT VECTOR MODEL



- HYPER PLANE DISTINCTLY CLASSIFIES THE DATA POINTS.
- MAXIMIZING THE MARGIN BETWEEN THE DATA POINTS OF DIFFERENT CLASSES
- FOR NON-LINEAR BOUNDARIES, SVM USES KERNELS TO TRANSFORM DATA INTO HIGHER DIMENSIONS
- HANDLING OUTLIERS AND MAXIMIZING THE MARGIN
- TRAINING PROCESS INVOLVES SOLVING A CONSTRAINED OPTIMIZATION PROBLEM

SVM

- HANDLES DIFFERENT DATA TYPES
- IMPROVEMENT WITH KERNELS

```
accuracy for general model: 9.95%
```

NDICATES CHALLENGES IN CAPTURING THE COMPLEXITIES

AGE-SPECIFIC FEATURES SIGNIFICANTLY INFLUENCE STYLE PREFERENCES

```
accuracy for Age-Based Split: 13.54%
```

SEASONAL VARIATIONS, WHICH OFTEN INFLUENCE FASHION TRENDS SIGNIFICANTLY, WERE BETTER CAPTURED WITH TARGETED SVM MODELS.

```
accuracy for Season-Based Split: 11.24%
```

MODEL CHALLENGES

GRADIENT BOOSTER

9.85%

NOISY AND COMPLEX NATURE OF FASHION DATA.

RANDOM FOREST

9.35%

FAILING DUE TO ITS ENSEMBLE NATURE.

SUPPORT VECTOR MACHINE

9.95% - 13.54%

SVMS MANAGED BETTER WITH NON-LINEAR DECISION BOUNDARIES BUT STILL FELL SHORT OF HIGH ACCURACY.

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REASONS FOR MODEL LIMITATIONS

- INADEQUATE FEATURE REPRESENTATION
- MODEL ASSUMPTIONS

RECOMMENDATIONS FOR IMPROVEMENT

- DEEP LEARNING
- ADVANCED FEATURE ENGINEERING
- HYBRID MODELS

NEED FOR MORE SOPHISTICATED APPROACHES CAPABLE OF HANDLING THE COMPLEXITIES OF FASHION TRENDS. DEEP LEARNING AND HYBRID MODELS OFFER PROMISING ALTERNATIVES FOR MORE ACCURATE PREDICTIONS IN THIS CHALLENGING FIELD.

THANK YOU!!