

PREDICTING CLOTHING FIT FROM CUSTOMER REVIEWS

ENHANCING CUSTOMER SATISFACTION
ON RENT THE RUNWAY

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RENT THE RUNWAY AND THE FIT CHALLENGE

About Rent the Runway

- Online fashion rental platform.
- Offers designer clothing and accessories for rent.
- Key services: special occasion rentals, everyday wear subscriptions, and unlimited rental plans.

The Fit Challenge

- Customers rate the same item as "Small," "Fit," or "Large."
- This inconsistency causes:
 - High return rates.
 - Customer dissatisfaction.



EXAMPLE DRESS REVIEWS

Amory

TOP CONTRIBUTOR

SIZE WORN: M
OVERALL FIT: SMALL

USUALLY WEARS: 6
HEIGHT: 5' 10"
AGE: 43
BUST SIZE: 32A
BODY TYPE:
STRAIGHT & NARROW
WEIGHT: 140LBS

[Browse Amory's reviews](#)

★★★☆☆

OCTOBER 8TH, 2024

Cool dress - very body con

I liked the style of the dress, but I found it to be very very tight in the mid-section, with very long sleeves and long length. I'm tall and slim, so was surprised at this fit.

Overall Fit	Chest
Runs small	Just right
Arms & Shoulders	Waist
Runs small	Runs small
Hips	Length
Runs small	Too Long

RTR Member

TOP CONTRIBUTOR

SIZE WORN: M
OVERALL FIT: TRUE TO SIZE

USUALLY WEARS: 4
HEIGHT: 5' 8"
AGE: 29
BODY TYPE: HOURGLASS
WEIGHT: 145LBS

★★★★★

NOVEMBER 22ND, 2024

Loved this!

I loved this dress. I got so many compliments. It's a perfect fall dress for all kinds of occasions, but it is a thinner material. It doesn't necessarily suck you in and on the hanger you can see right through the dress but on I didn't have any issues.

Overall Fit
Just right

Mackenzie

TOP CONTRIBUTOR

SIZE WORN: M
OVERALL FIT: LARGE
RENTED FOR: PARTY

USUALLY WEARS: 4
HEIGHT: 5' 4"
AGE: 30
BUST SIZE: 32DD
BODY TYPE: PEAR
WEIGHT: 130LBS

★★★★★

FEBRUARY 15TH, 2024

Really Cute Winter Dress

Loved the dress but fit too large! I would've preferred a small rather than medium due to the neckline, length of dress, and length of sleeves

DATASET OVERVIEW

- Source: Rent the Runway dataset
- Size: ~192,000 reviews
- Labels: Fit categories—Small, Fit, Large





TF-IDF AND LOGISTIC REGRESSION

TF-IDF (Term Frequency-Inverse Document Frequency):

- Highlights important words based on frequency in individual reviews and rarity across all reviews.
- Captures words like “tight” or “baggy” to predict fit categories.

Logistic Regression:

- A simple, interpretable linear model.
- Best performance among traditional methods.





EMBEDDINGS AND BERT

- **Embeddings:**
 - Represent words as dense vectors capturing semantic relationships.
 - Go beyond word counts to understand context.
- **BERT (Bidirectional Encoder Representations from Transformers):**
 - Pre-trained on massive text corpora.
 - Captures deeper nuances like “tight shoulders” vs. “tight hips.”
- **Challenges:**
 - High computational cost.
 - May be oversized for simpler tasks like fit classification.



RESULTS AND INSIGHTS

Optimal Approach:

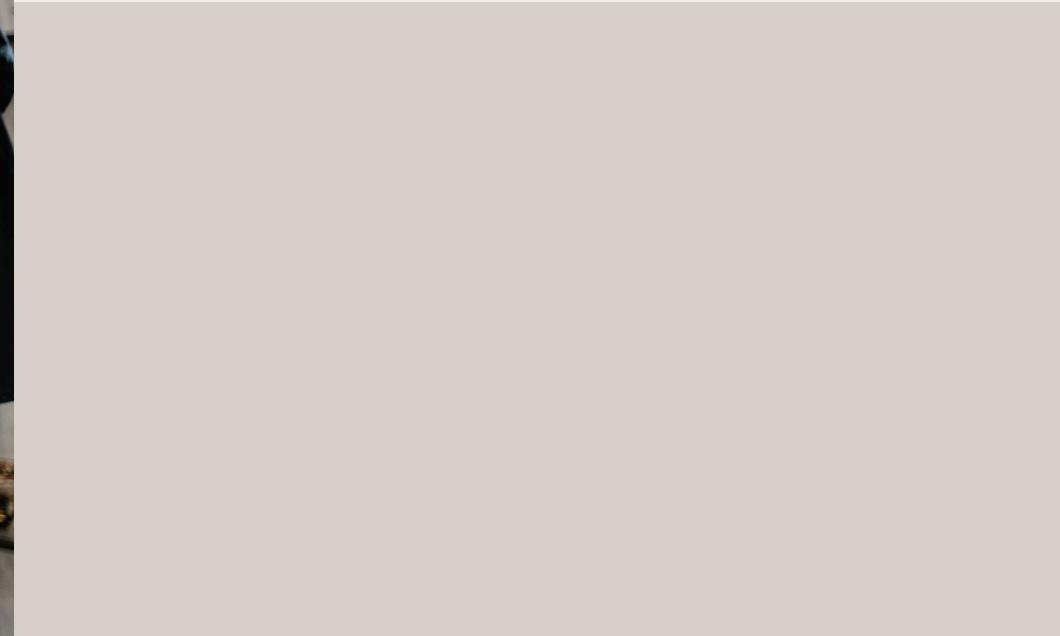
- TF-IDF + Logistic Regression.

Performance:

- Weighted F1 Score: 0.79.
- Accuracy: 81%.

Key Challenges:

- Label imbalance: Fit is the dominant category.





PRACTICAL APPLICATIONS AND NEXT STEPS

Benefits:

- Pre-select recommended sizes for customers.
- Reduce return rates and operational costs.
- Improve customer satisfaction.

Limitations:

- No clear clusters emerged using UMAP visualization due to a lack of metadata (e.g., product features, user demographics).

Future Directions:

- Integrate Metadata:
 - Include product-level features like brand or fabric type.
- Expand Applications:
 - Use predictions to improve search rankings.
 - Offer detailed fit insights in product descriptions.

THANK YOU

