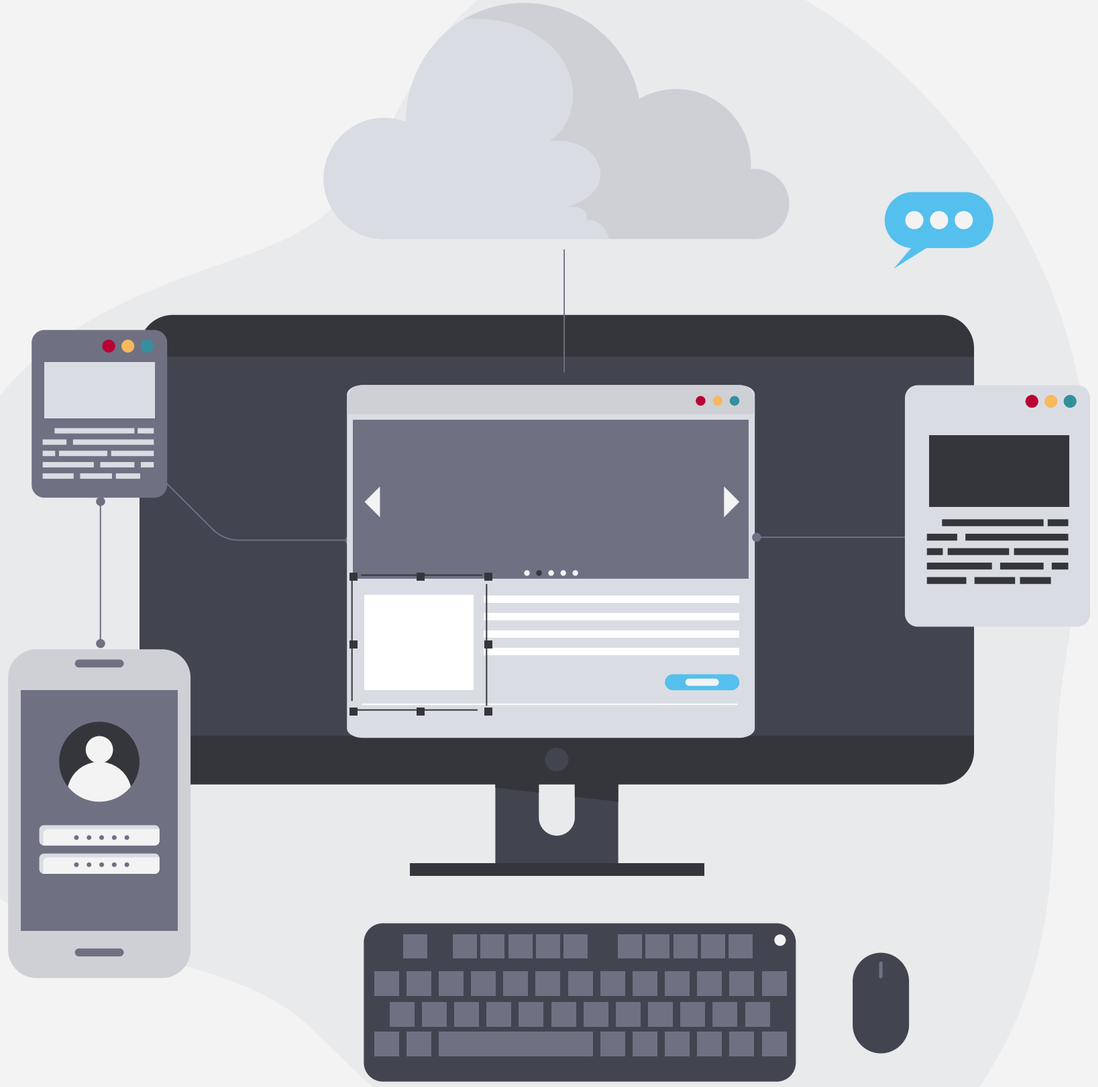
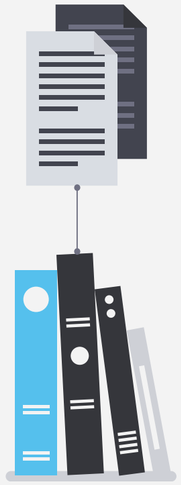
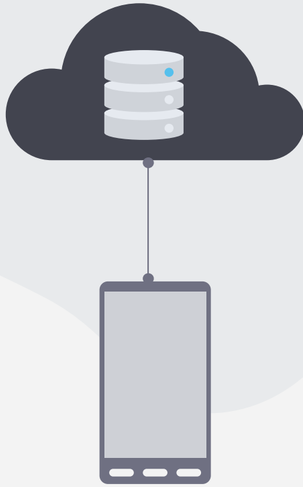
# Twitter Sentiment Analysis for Apple Products

By group 11 DSFT-13



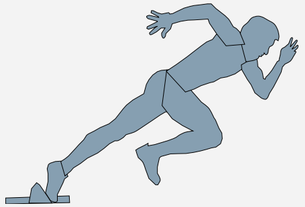




# Transforming How We Listen to Customers

- Automated system to classify Twitter sentiment in real-time

- Focus on catching customer complaints quickly



- Enables faster response to product issues
- Deploy the Classifier

# Why We Need This Solution

## The Challenge We Face

- Thousands of daily mentions about Apple products on Twitter
- Manual sentiment analysis is slow and inconsistent
- Critical complaints get missed or delayed

## Our Automated Solution

- Real-time Twitter sentiment classification
- Enables faster response to issues
- Focus on catching complaints automatically

- ***Business Value:*** *Improved customer satisfaction & product quality*

# What We Set Out to Achieve

- **Primary Objective:** Catch customer complaints automatically

**OUR TARGETS:**

**>45% Negative Recall | Achieved: 50%**

- Catch nearly half of all complaints

**Handle Imbalanced data**

- Focus on rare but critical feedback

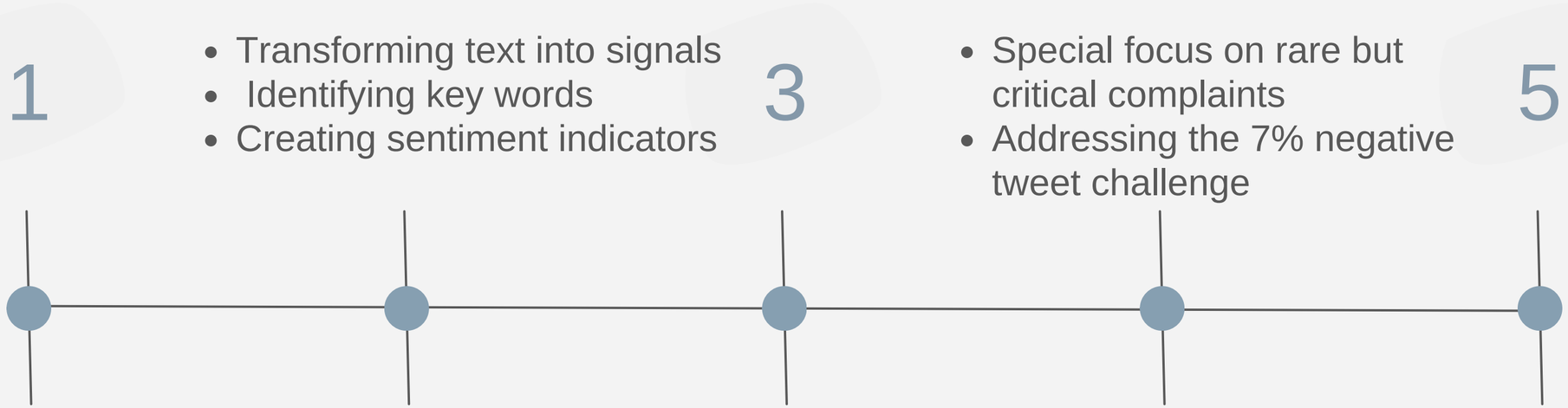
**Real-Time Preprocessing**

- Instant analysis of thousands of tweets

**Deliver Actionable Insights**

- Product teams can trust and act on results

# Our 5-Step Analysis Journey



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## Data Preparation

- Cleaning 9,093 tweets
- Removing special characters
- Standardizing text format.

2

## Feature engineering

- Transforming text into signals
- Identifying key words
- Creating sentiment indicators

3

## Model Selection

- Choosing the right approach for sentiment
- Testing multiple algorithms
- Selecting best performer for our data

4

## Handling Imbalance

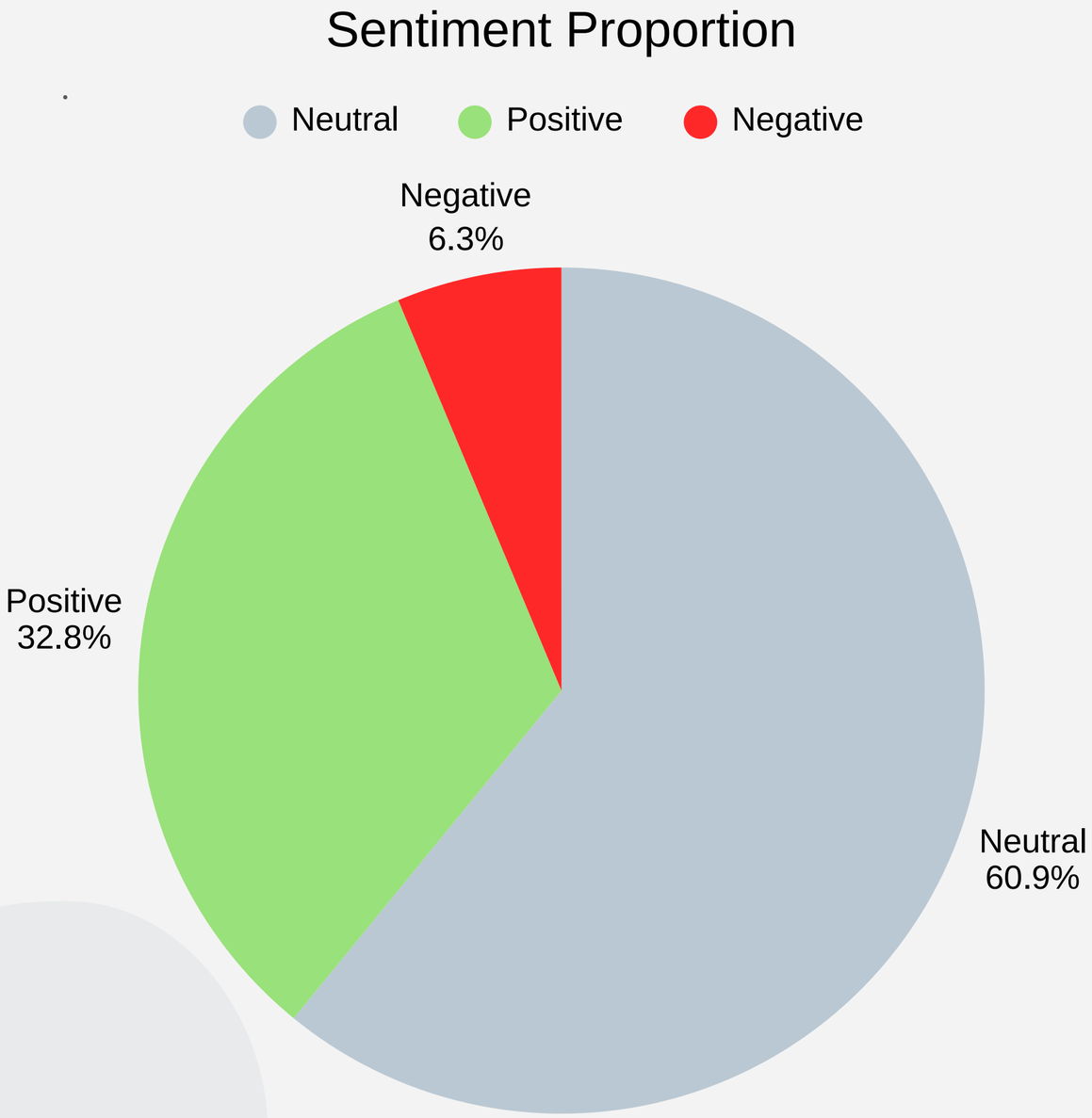
- Special focus on rare but critical complaints
- Addressing the 7% negative tweet challenge

5

## Performance Evaluation

- Measuring against business targets
- Evaluating recall and accuracy
- Validating real-world performance

# The critical 6%: where the Business value lives




## Key Insights:

- 61% Neutral tweets
- 33% Positive feedback
- 6% Negative = Customer Complaints

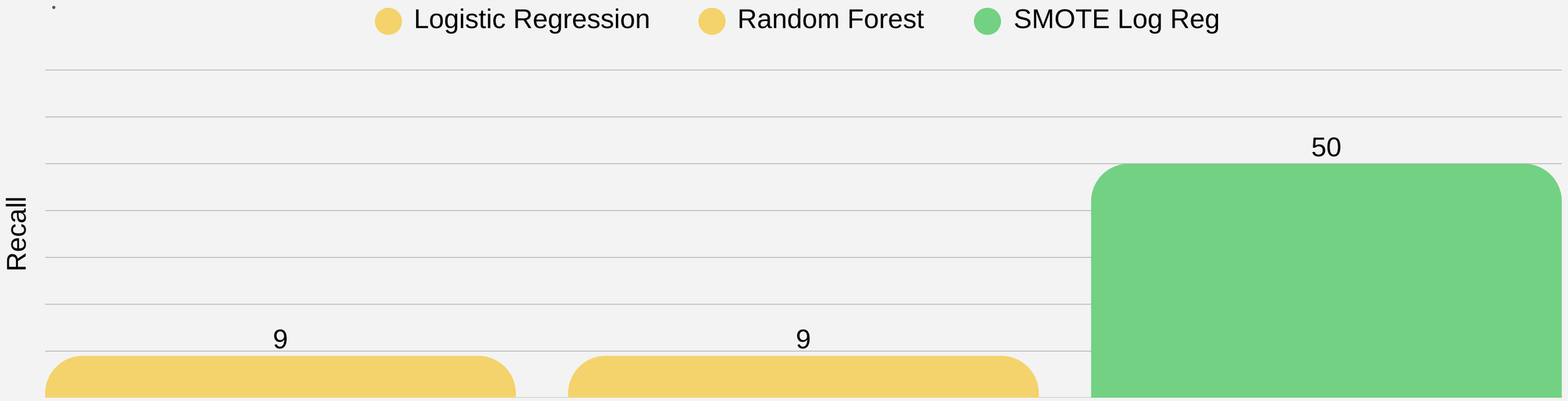
## Business Impact:

- The rare 570 negative tweets (6% of total) represent our biggest opportunity for customer satisfaction improvement

## Data:

- 9,093 human-labeled tweets from CrowdFlower

# Choosing the Right Approach: Why SMOTE Won




## Logistic Regression

- Catches 9 out of 100 customer complains
- Biased towards majority classes (94% of data)

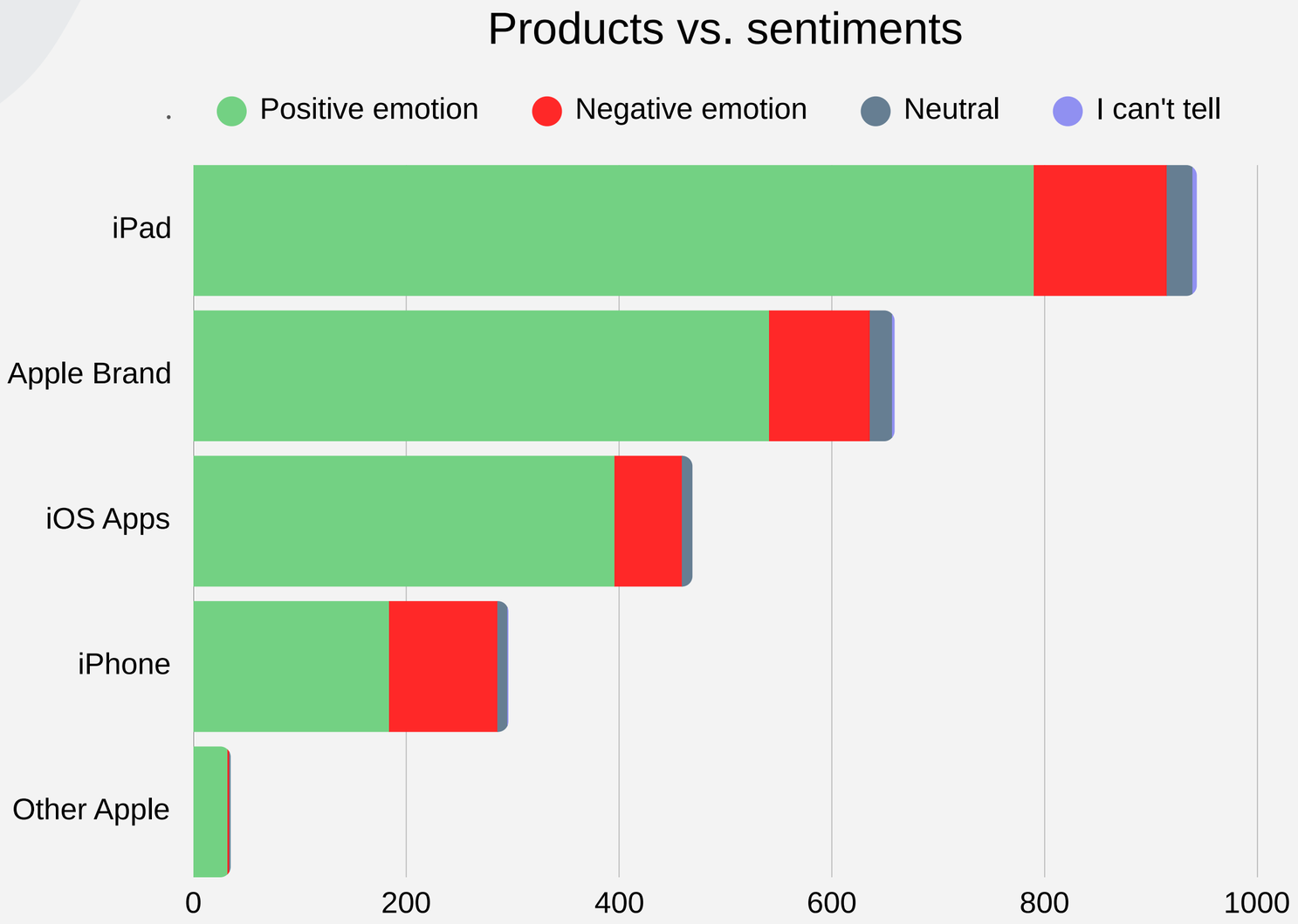
## Random Forest

- Also catches 9 out of 100 complains
- Still struggled with the 6% imbalance challenge

## SMOTE Log Regression

- Always catches 50% of all complains
- Handles class imbalance effectively
- Balanced performance across metrics

# Business Impact: Targeted Product Insights




## Priority actions:

### iPhone:

- Urgent attention needed
- 34% of tweets are complaints
- Focus on core functionality

### iPad:

- Monitor and maintain
- High volume, moderate complaints
- Continue current quality

### iOS Apps:

- Success story
- 84% positive sentiment
- Expand successful features

- *Targeted product insights drive high-impact improvements in customer satisfaction.*

# Recommendations: From Insights to Impact

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## Immediate Actions

Integrate real-time monitoring
Set up automated alerts
Team training on dashboard

## Strategic Focus Areas

**iPhone**: Address core functionality issues
**iPad:** Maintain quality, monitor trends
**iOS Apps**: Expand successful features

## Longterm Value

Quarterly model updates
Platform expansion (Instagram, Reddit)
Product launch sentiment tracking

# Our Evolving Customer Intelligence

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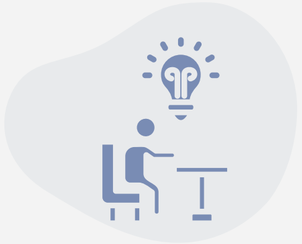


## Current Capabilities

Twitter sentiment
Real-time analysis
Product-specific insights
50% complaint recall

## Next Phase Development

**Q1 2026:** Instagram + Reddit integration
**Q2 2026:** Predictive analytics prototype
**Q3 2026:** Global sentiment expansion

## Future Vision:

Multi-platform monitoring
Predictive issue detection
Automated response system
Global market intelligence

# From Notebook to production: Live Demo

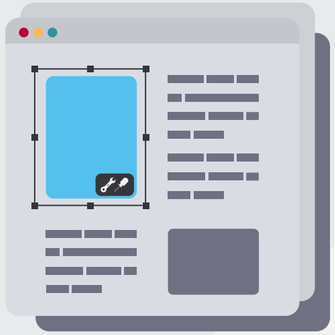
## Deployed & Ready to Use

Real-time web application
Accessible on any device
Instant sentiment predictions

Link

## Features

Test with any Apple product tweet
See confidence scores for each prediction
Understand model decision-making



# Thanks!

**Do you have any questions?**

**Github**

**Sentiment Classifier App**