



# PDF Expert

## **Predicting Engagement of Social Media Posts Using Content Type & Timing Features**

for Head of Product Marketing

June 10 2025

## Goal:



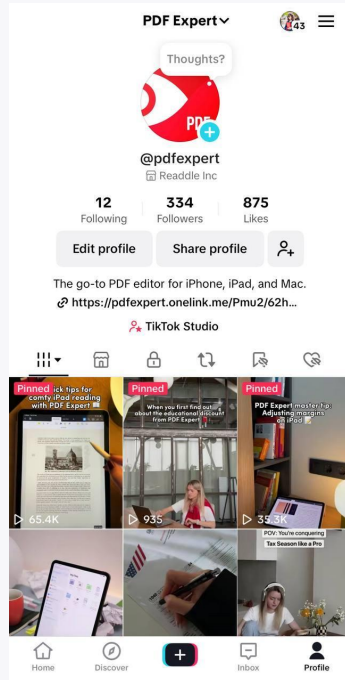
Help guide content strategy by predicting engagement.

**Scope:** Jan 1 – Apr 30, 2025

**Platforms:** Facebook, X, TikTok

**Target:** Engagements (likes, comments, shares, etc.)

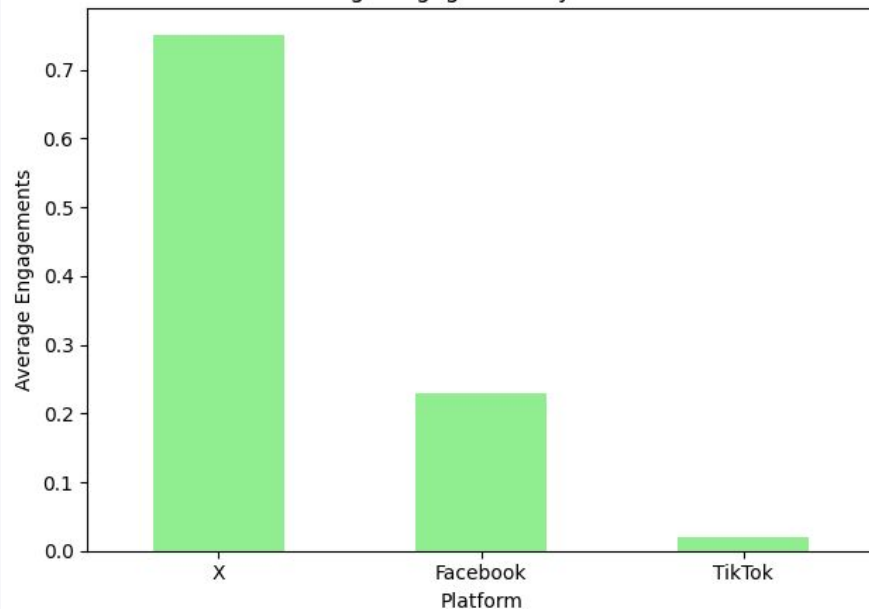
- What content types and timing features drive engagement?
- Can we predict future engagement to optimize performance?



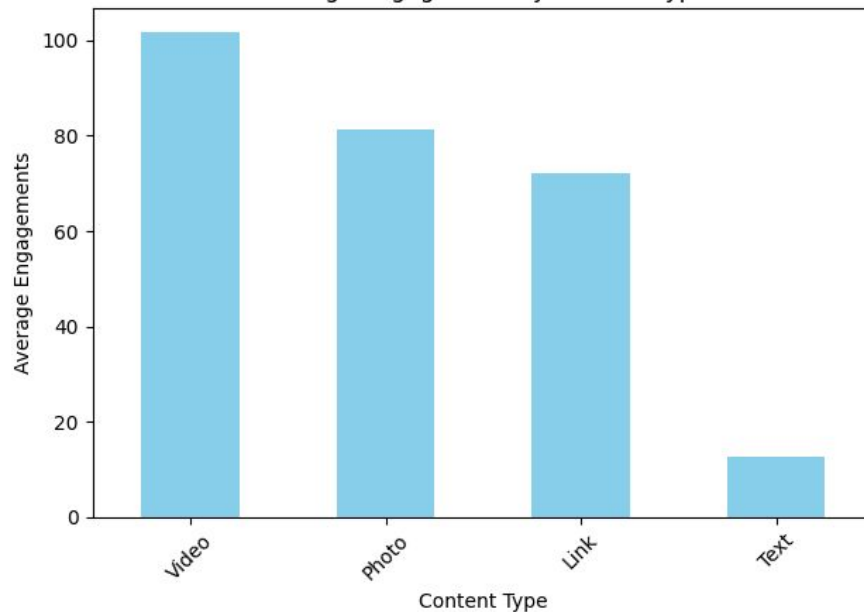
## Exploratory Insights

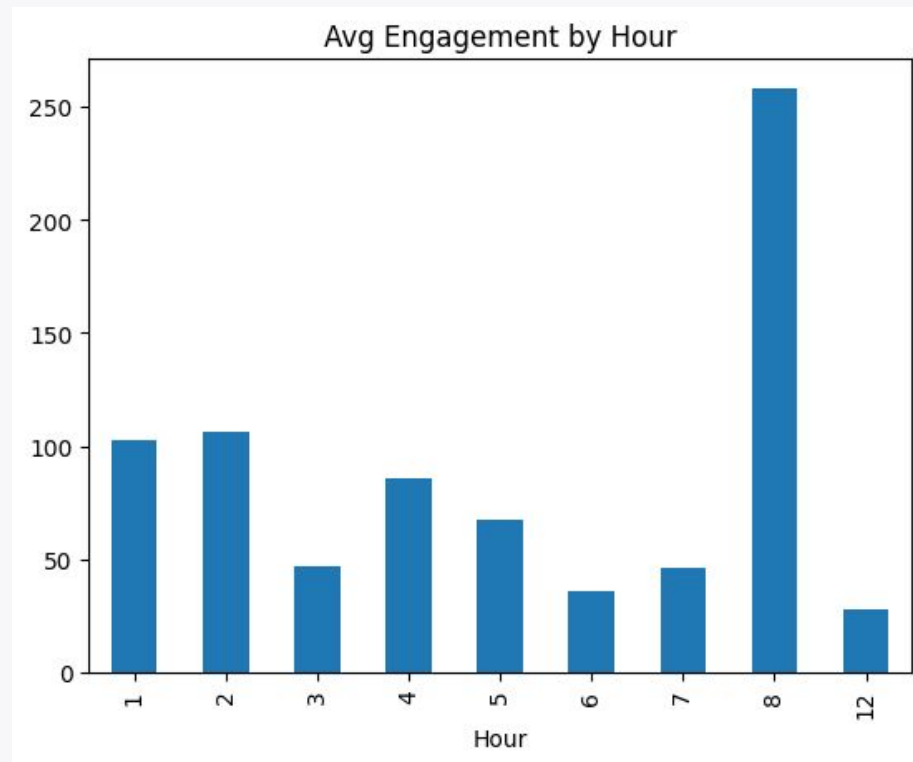
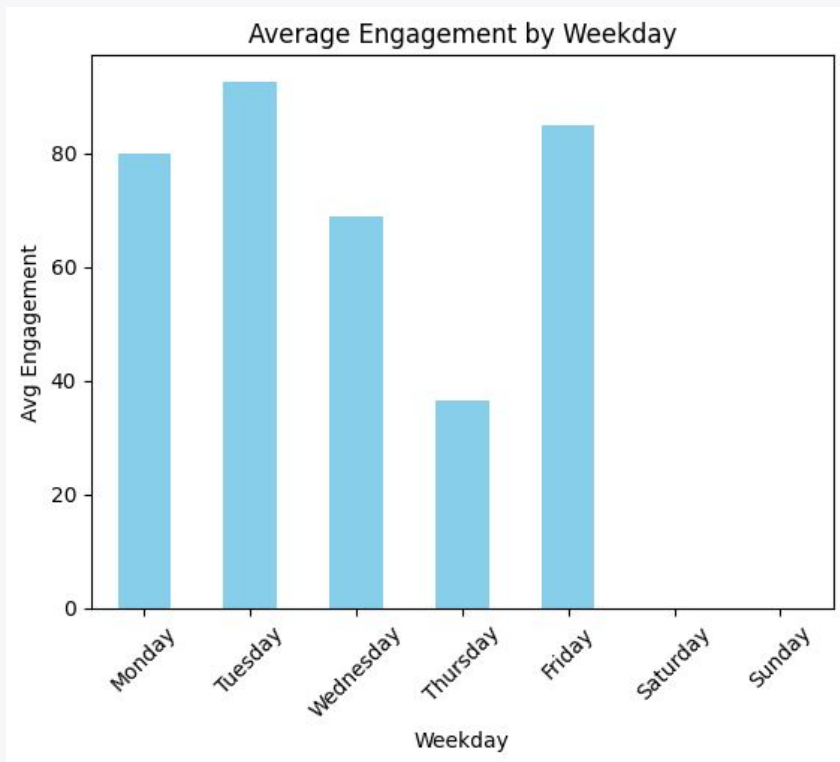
I used Sprout Social internal data, prepared to make it ML-ready, and engineered new features like weekday and posting hour to capture behavioral patterns.

Average Engagement by Platform



Average Engagement by Content Type





## Models Tested

### Clean → Feature Engineer → Split → Train → Evaluate

#### I tested 3 regression models:

- Linear Regression
- Decision Tree
- Random Forest (Best performance)

#### Evaluation Metrics:

MAE (Mean Absolute Error)

RMSE (Root Mean Squared Error)

$R^2$  (R-squared) — tells how well the model explains variability.

#### Most important features were:

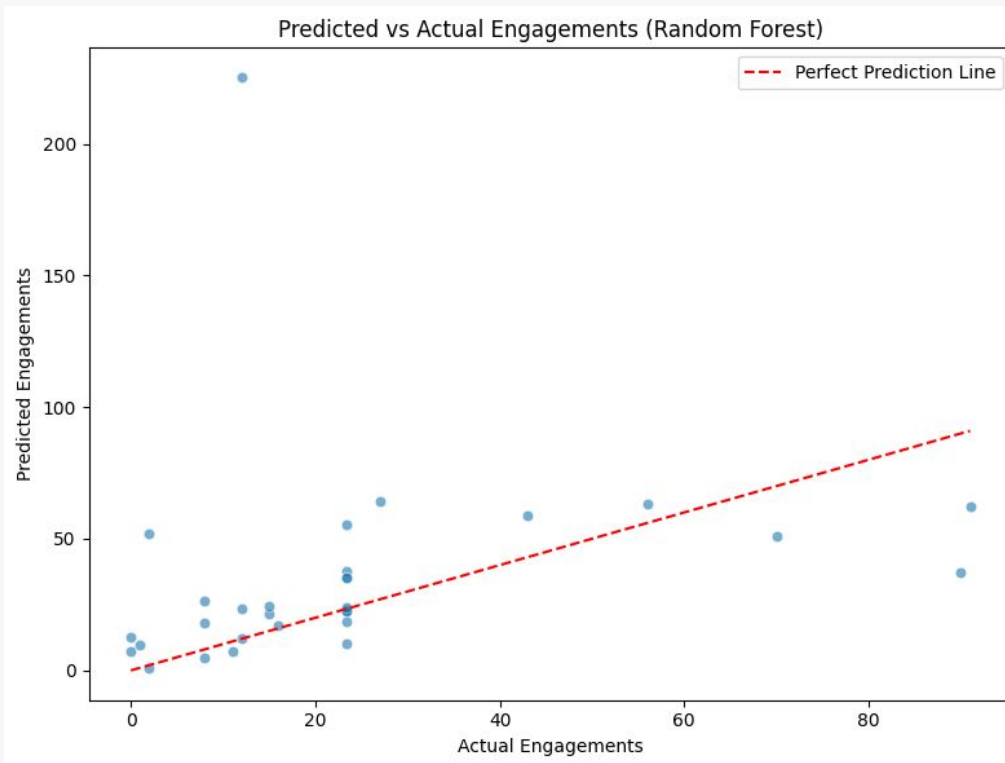
Content Type

Day of Week

Platform

Hour

Post Length



## Strategic Recommendations & Next Steps

### Content Strategy:

- Prioritize engaging content types per platform
- Repurpose top content on high-performing days

### Scheduling:

- Post on Mon/Tue/Fri
- Aim for 8 PM peak time

### Platform Focus:

- Focus on X & Facebook
- Adjust TikTok cadence for more consistent data

### Content:

- Use findings to inform Q3–Q4 content calendar
- Run similar analysis monthly or quarterly
- Extend model with text (NLP) or visual features
- Explore predicting conversions next
- Include data from Paid Performance to expand the analysis and predicting model



# Thank you