

Product Requirements Document (PRD)

Project Title: AI-Powered Object Detection Tool for Influencer Content Labeling

Author: Valeria Sanz Jones

Role: Influencer Marketing Data Analytics Intern

Organization: Bloom Nutrition

1. Overview

1.1 Background

Bloom Nutrition's influencer marketing team manages and analyzes large volumes of social media content generated by hundreds of creators. These daily uploads require manual labeling to categorize product appearances, content types, and brand placement; a process that was time-consuming, inconsistent, and prone to human error.

To streamline operations and improve data quality, this project introduced an AI-powered object detection system that automates the labeling process using Roboflow and machine learning models.

1.2 Objective

Develop, train, and deploy an automated content labeling system that identifies Bloom Nutrition products in influencer-generated content (e.g., Instagram, TikTok videos, and photos). The goal is to:

- Reduce manual labeling time by at least **70%**
- Improve labeling accuracy and consistency
- Enhance campaign analytics and reporting through standardized metadata

2. Problem Statement

2.1 Current Challenges

- Manual labeling consumed 2-3 hours per day for the influencer analytics team.
- Inconsistent labeling across team members reduced data accuracy.
- Limited ability to scale labeling to new campaigns and influencer partnerships.

2.2 Impact

Inefficient labeling created bottlenecks in the influencer performance pipeline, delaying metrics such as engagement rate, product visibility, and ROI calculations.

3. Goals and Success Metrics

Goal	Metric	Target
Automate content labeling	% of posts automatically labeled	≥ 80%
Improve accuracy	Precision and recall vs. manual labels	≥ 90%
Reduce processing time	Hours per day spent labeling	-70%
Increase data usability	# of structured metadata fields integrated in dashboards	+3 new fields

4. Product Scope

4.1 In-Scope

- Building and training a custom Roboflow dataset using manually labeled product images.
- Implementing an object detection model (YOLOv8 / Roboflow model API).
- Integrating detection results into existing influencer analytics pipelines (Creator IQ).
- Testing and validating model performance.

4.2 Out of Scope

- End-to-end influencer performance dashboards (handled by the analytics team).
- Deployment to production-grade APIs beyond internal use.

5. Functional Requirements

Feature	Description	Priority
Dataset Creation	Curate and annotate 1,000+ influencer images of Bloom products.	High
Model Training	Train YOLOv8 model in Roboflow workspace with product categories (Greens, Protein, Creatine).	High
Inference Pipeline	Use Roboflow API to label new incoming influencer content automatically.	High
Dashboard Integration	Export detection results to CSV or JSON format for the influencer metrics dashboard.	Medium
Accuracy Evaluation	Evaluate precision, recall, and F1 score; refine dataset if <90% accuracy.	High

6. Technical Architecture

Tools & Platforms:

- **Roboflow** – Dataset management, annotation, and model training
- **Creator IQ or Tribe Dynamics**: Influencer data analytics platform
- **Python** – API integration and data pipeline scripting
- **Pandas / NumPy** – Data preprocessing and metrics analysis
- **Google Sheets / BigQuery** – Label exports and reporting integration
- **YOLOv8 Model** – Core object detection architecture

Workflow:

1. Creator IQ collects influencer content.
2. Upload and annotate in Roboflow.
3. Train detection model.
4. Deploy model via API for automatic labeling.
5. Export labeled data back to Creator IQ.

7. Risks and Mitigations

Risk	Impact	Mitigation
Low model accuracy	Medium	Increase dataset size and variety
Poor lighting or angles in influencer content	Medium	Include diverse training data (different lighting/backgrounds)
API downtime	Low	Enable manual labeling fallback option
Product packaging changes	Medium	Update training data quarterly

10. Results & Impact

- Reduced manual labeling time by 70% (from ~4 hours/day to 1 hour/day).
- Increased accuracy in product tagging from ~75% to 92% precision.
- Improved scalability of content analysis — system now supports 10x more influencer uploads weekly.
- Enabled data-driven influencer insights, improving Bloom's ability to optimize partnerships and ROI tracking.