

InstaCampaign

Final Project Report

Bruce Brown, Kadarius Clemons

Project Overview

Problem

Small business owners and creators often lack time, marketing expertise, and resources to write compelling email campaigns.

Solution

We built a web app powered by Gemini 1.5 Flash API to generate high-quality, personalized, and effective 3-part email campaigns based on a single text prompt.

Core Features

- One-line text input to describe a product or service
- AI-generated 3-email sequence (subject line, body, call-to-action).
- Real-time preview and download functionality.
- Simple single-page UI (HTML, CSS, JavaScript frontend).
- Resend API integration for email sending.

Use Case

A candle maker types: “I sell candles made with essential oils.”

The app generates a mini-campaign:

1. Email 1: Introduction & brand story
2. Email 2: Benefits & testimonials
3. Email 3: Limited-time discount offer

Dataset & Tools

Dataset:

Built from template research on Hubspot, Mailchimp blogs, Hugging Face, and simulated samples.

Libraries & APIs:

Gemini 1.5 Flash API, Resend API, NLTK, textstat, pandas

System Architecture

Backend:

Node.js + Express, handles Gemini Flash API requests, integrates Resend API.

Frontend:

HTML, CSS, Vanilla JS with preview cards and progress indicators.

Technical Architecture Diagram

User Input > Node.js/Express Backend > Gemini 1.5 Flash API > AI-Generated Emails
Resend API: Email Sending < Frontend Preview UI

Evaluation & Testing

Metrics:

- BLEU Score: 0.0954
- Reading Ease 65.3
- Word Count per Email: ~112 words

Testing Method:

Emails tokenized and compared to labeled references in Google Colab.

Challenges & Lessons Learned

- Difficulty balancing creativity and consistency in email generation.
- Integrating Gemini API with Node.js required strict error handling.
- Resend API integration initially failed due to JSON structure mismatches.
- Positive feedback on simplicity and personalization.

Future Improvements

- Multilingual support
- CRM
- Analytics dashboard
- Team collaboration

Links

Presentation Video: [Link](#)

GitHub Repo: [Link](#)

References

- Hugging Face Research
- Gemini Flash API Docs
- Mailchimp Blog, HubSpot Research
- Resend API Documentation