

## Core Features of the Content Generation Agent

Here's a categorized list of **features** involved in the Content Generation Agent based on the brief:

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### 1. Prompt-to-Content Generation

Feature	Description
Prompt Input Parsing	Accept and interpret brand/product input (e.g., "Launch a matcha drink for Gen Z").
Content Contextualization	Understand product positioning, tone, target audience, channel type, etc.
Structured Output Generation	Generate multiple content types from a single prompt: text, visual, video.
Natural Language Editing	Respond to follow-up prompts like "Make it funnier" or "Change tone to Gen Z slang."

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### 2. Ad & Social Content Creation

Feature	Description
Ad Copywriting	Generate variants of ad copy (headlines, subtext, CTA).
Caption Generation	Instagram/TikTok captions (hook, hashtags, tone-specific phrasing).
CTA Optimization	Suggest call-to-action phrases based on platform best practices.
Platform-Specific Formatting	Ad content generated in platform-appropriate formats (e.g., IG vs Meta Ads).

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### 3. Creative Asset Generation

Feature	Description
Static Visual Generation	Use AI tools (DALL-E, Midjourney) to create ad banners or product mockups.
Product Visual Enhancement	Stylize uploaded images or auto-generate background.
Email Creative Blocks	Generate headers, product visuals, body sections for email campaigns.

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### 4. UGC/Video Content Scripting & Editing

Feature	Description
Scriptwriting	Generate short-form video scripts (testimonial, demo, influencer tone).
Auto Clipping & Editing	Edit long-form videos into short-form clips using Opus Clip, Captions, etc.

Feature	Description
SFX & Captions	Auto-insert captions, emojis, transitions, or audio hooks.
Tone Personalization	Adjust script tone — casual, urgent, humorous, etc.

## 5. Rich Media/Interactive Content

Feature	Description
Interactive Ads (Optional)	Generate prompts for quiz-based ads, gamified banners, etc.
Rich Content Templates	Generate media using dynamic templates with embedded logic (e.g., product carousel).
Multi-format Output	Produce static, video, and animated outputs in one prompt batch.

## 6. Edit, Iterate, and Personalize

Feature	Description
Chat-Editable Revisions	Accept follow-up commands like “Add a coupon image,” “Shorten headline.”
Multi-Version Output	Generate multiple variations per asset for A/B testing.
Tone Adaptation	Match tone with brand voice or uploaded tone samples.

## 7. Integration & Deployment

Feature	Description
Output to Klaviyo / Email Tools	Send content blocks into campaign builders (via API/webhooks).
Output to Ad Platforms	Format output for Meta, Google, TikTok, etc.
Asset Exporting	Export final outputs (copy + media) as ZIP, or store to cloud.

## 8. Modularity & Reusability

Feature	Description
Brand Profiles	Store reusable brand info (tone, logo, palette) for multiple campaigns.
Memory Across Sessions	Retain past prompts and outputs for reference.
Re-usable Workflows	Agent can create content across campaigns with same logic, no hardcoding.

**Total Unique Features (Grouped): ~35–40 individual features, across 8 major functional areas.**

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### MVP Feature Priorities (Suggestion)

To keep the MVP, lean yet powerful, prioritize:

1. Prompt-to-content generation (basic text + captions)
  2. Ad copy variants
  3. Static visual suggestions (AI-based or templates)
  4. UGC video scripting
  5. Simple follow-up prompt editing
  6. Output download/export
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### SECTION 1: MVP FEATURE SET (PHASE 1)

Category	Feature	Description
Prompt Input	Prompt Parsing	Accept a prompt like “Launching a Gen-Z matcha drink” and understand the product, tone, and platform.
Prompt Input	Context Understanding	Interpret the audience, brand type, and required asset types from a single prompt.
Content Creation	Ad Copy Generator	Generate multiple versions of ad headlines, subheadlines, and CTA lines.
Content Creation	Social Captions	Instagram/TikTok captions with hashtags and Gen-Z tone.
Content Creation	Email Creative Blocks	Auto-generate email headers, product blurbs, CTA buttons.
Visuals (Static)	Image Prompt Generator	Suggest image prompts to use with DALL·E/Midjourney or templates.
Visuals (Static)	Simple Image Creator	Use AI tools or mock templates to generate basic visuals (product images, headers).
UGC & Video	Script Generator	Write 30–60 second UGC-style video scripts.
UGC & Video	Hook + Cut Suggestions	Suggest how to cut long videos into short social clips (even if manual for MVP).
Follow-Up Editing	Prompt Revisions	Enable chat-editable changes: “Make CTA stronger”, “Add humor”.
Follow-Up Editing	Versioning	Generate and display 2-3 versions per output (for A/B testing).
Output	Output Exporter	Export copy and creatives into a ZIP or JSON format for use.
Output	Streamlit UI	Simple prompt + preview interface for internal use/testers.

Category	Feature	Description
Modularity	Brand Context Storage	Store reusable tone/persona elements (brand name, audience, tone style).
Modularity	Template Reuse	Use modular templates for ads/emails/socials for reuse across clients.

## SECTION 2: FULL FEATURE SET (PHASE 2+)

Category	Feature	Description
Prompt Input	File Uploads	Accept product images, brand docs, or past campaigns to improve context.
Prompt Input	RAG Integration	Use LangChain/LlamaIndex to fetch client-specific documents for context-aware generation.
Content Creation	Platform-Adaptive Copy	Automatically format copy for Instagram, Meta Ads, TikTok, etc.
Content Creation	Rich CTA Suggestions	Intelligent CTAs based on platform behavior and persona psychology.
Visuals (Static)	AI Product Visual Generation	Remove background, apply templates, generate stylized product visuals.
Visuals (Static)	Visual Quality Enhancer	Clean, sharpen, or adjust image aesthetics automatically.
UGC & Video	Opus Clip Integration	Auto-cut long videos into shorts with hooks, emojis, transitions.
UGC & Video	Captions API Integration	Generate captions and effects via Captions or RunwayML API.
UGC & Video	Voice-to-Script	Accept voice input and generate a script or ad copy from it.
Rich Media	Interactive Ad Generator	Auto-create rich ad templates like quizzes, carousels, gamified units.
Rich Media	GIFs & Animations	Output GIF-based motion assets for stories or ads.
Follow-Up Editing	Chat Memory	Store past iterations and prompt chains to allow deep editing.
Follow-Up Editing	Tone Personalization	Match content to sample tone ("Upload tone guide" or "Use founder voice").
Output	Klaviyo Integration	Push content into Klaviyo via API to auto-stage email campaigns.
Output	Meta/TikTok API Format	Output assets formatted for ad manager ingestion.

Category	Feature	Description
Output	ZIP + Download All	Auto-package ad copy, captions, visuals, and scripts for download.
Modularity	Brand Kits	Store logos, fonts, tone rules per brand profile.
Modularity	Multi-client Reusability	Reuse workflows across brands with minimal reconfig.
Analytics	Content Performance Prediction (optional)	Score copy based on past success models or GPT-finetuned classifiers.
Analytics	A/B Testing Suggestions	Recommend copy variants for testing.
Analytics	Asset Usage Logging	Track which assets were downloaded, reused, edited.

## CONTENT GENERATION AGENT — TECH STACK

### LLM & Natural Language Processing

Used for generating ad copy, captions, video scripts, email content, and iterative prompt editing.

- **OpenAI GPT-4o / GPT-4-turbo** — for fast and high-quality text generation
- **Anthropic Claude 3** — for better long-form structuring (optional)
- **LangChain** — to orchestrate prompt templates, memory, multi-agent logic
- **LlamaIndex / Haystack** — for prompt-chaining, RAG (if brand-specific memory is needed)
- **PromptLayer / Weights & Biases** — for prompt versioning and logging

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### Image & Creative Generation

Used to generate static creatives, product visuals, ad headers.

- **Midjourney** or **DALL·E 3** — for concept creatives (via API or webhook)
- **RunwayML Gen-2** or **Scenario.gg** — for stylized ad visuals
- **RemBG / Remove.bg API** — for background removal
- **Canva API** (optional) — for editable templates and branded assets

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### Video Editing & UGC-Style Content

Used to script and auto-edit short-form video content for platforms like TikTok or Instagram.

- **Opus Clip API** — auto-generate short clips, hooks, and cutdowns from long-form interviews
- **Captions App API** — for AI-generated captions, zooms, and sound effects
- **RunwayML / Descript / Pictory** — for automated editing & AI voice-over if needed

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### Input Upload & Content Enrichment

Handling brand uploads, product images, tone samples, past copy.

- **Streamlit / Gradio** — lightweight input frontend for testing prompts
  - **AWS S3 / Firebase Storage** — asset upload and storage
  - **CLIP (OpenAI)** — image-text matching to infer style or tone from visual uploads
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### Agent Workflow Orchestration

To manage tasks, iterations, memory, and input/output history.

- **LangChain Agents / CrewAI** — for defining task roles (e.g., AdWriter, VisualDesigner)
  - **FastAPI** — for modular agent service backend
  - **Celery + Redis / Prefect** — for async task orchestration and retries
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### Prompt/Output Editing & Revision

For editing outputs on user prompts like “Make tone more urgent.”

- **Conversational Memory (LangChain memory)** — to retain context
  - **OpenAI function calling / Tool use** — for editing, rephrasing, and regenerating variants
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### Packaging & Deployment

- **Docker** — containerize each agent/module
  - **Kubernetes (optional)** — if scaling multi-agent pipelines
  - **Streamlit / Vercel** — lightweight UI for demo/prototype
  - **PostHog / Segment** — optional for content usage analytics
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### Third-Party Integrations

Used to pull/push content across marketing tools:

- **Zapier / Make.com** — quick integration with tools like Klaviyo, Google Drive, Instagram
  - **Klaviyo API** — for email content injection
  - **Meta Ads Library / TikTok Creative Center** — reference trending ad types (if you want agent to “learn” tone from real ads)
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### Optional Enrichment APIs

- **Copy.ai / Jasper / Writesonic API** — as fallback generators
  - **DeepL / Google Translate API** — for multilingual content
  - **Brandfetch API** — to auto-fetch brand logo/colors
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### Example Architecture (Simplified)

User Prompt --> LangChain Agent -->

- |-- Ad Copy Generator (OpenAI)
- |-- Static Creative Generator (DALL·E/Midjourney)
- |-- Video Script + Edit Flow (Opus Clip + Captions)

- |-- UGC Formatter (Claude + Templates)
- |-- Optional Editing Tools (function-calling APIs)
- > Output (via Streamlit, CLI, or webhook)