AI-Powered Multimodal Marketing Content Generator with Customizable Product Visualization

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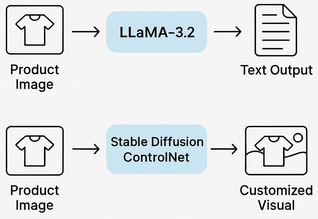
Introduction

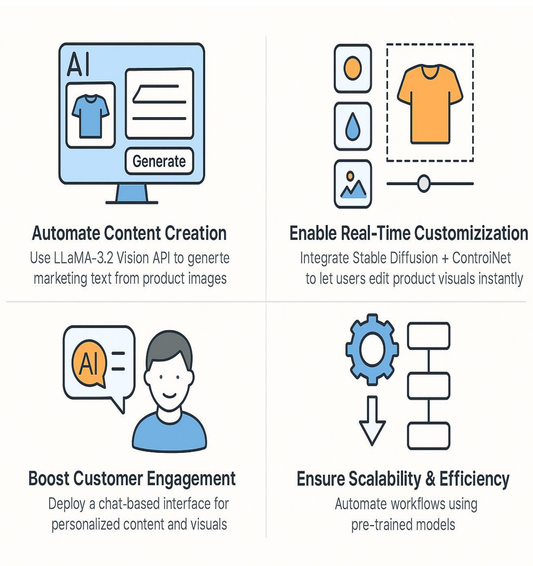
Creating personalized marketing content for large product catalogs is a major challenge in e-commerce—manual photography and copywriting are time-consuming, expensive, and slow.

To solve this, we developed an AI-Powered Multimodal Marketing Content Generator with customizable Product Visualization that automates both text and visual content creation.

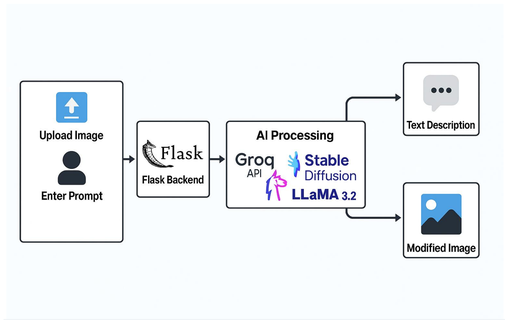


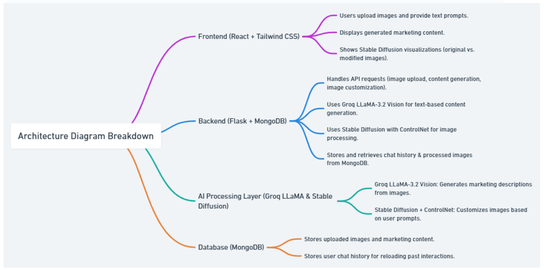
Our solution cuts costs, speeds up product rollouts, and enhances the customer experience with scalable, AI-driven marketing content.

Objectives



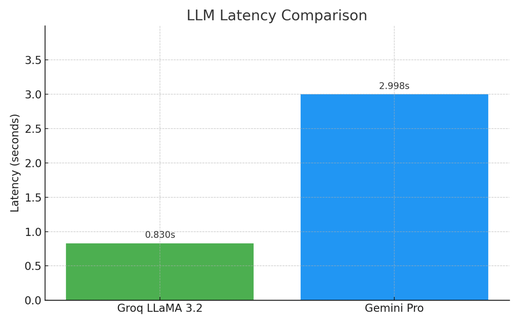
Methodology





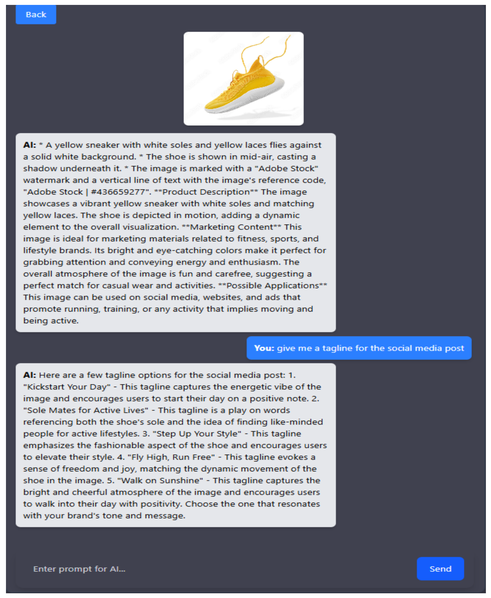
Results

Groq vs Gemini:

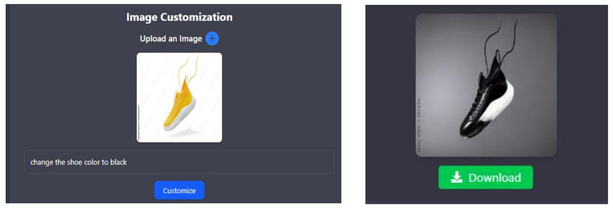


Uploading image to generate marketing content:

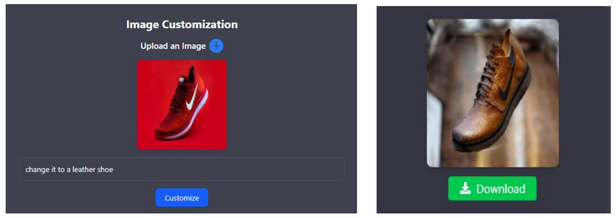
Generated content and Chatting Interface:



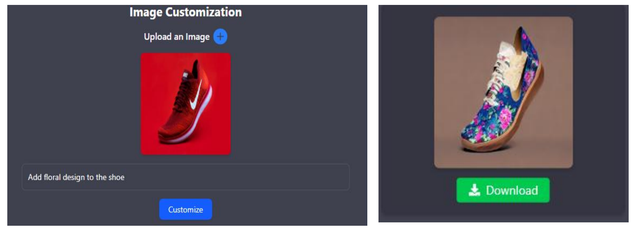
Customization of shoe color:



Customization of shoe texture:



Customization of shoe design to floral:



Conclusion

This project showcases how multimodal AI can transform e-commerce by automating marketing content creation. Using Groq's LLaMA-3.2 Vision for text generation and Stable Diffusion + ControlNet for real-time image customization, our system generates product descriptions from images and enables interactive visual edits.

Key benefits include:

- Reduced content creation time and cost
- Enhanced customer engagement
- Scalable, personalized marketing workflows

Innovations:
Integration of vision-language and image synthesis models for end-to-end content generation.

Limitations:

- No fine-tuning due to GPU constraints
- No quantitative evaluation metrics used
- May require domain-specific customization

Despite these, the architecture is future-ready—supporting LoRA fine-tuning, GANs, and RAG-based personalization, offering a scalable solution for AI-driven digital marketing.

Future Works

1. Fine-Tuning Stable Diffusion on Fashion Datasets
2. Integrate LoRA for Efficient Model Adaptation
3. Add Retrieval-Augmented Generation (RAG)
4. Expand Explainability & Metrics

References:

High-Resolution Image Synthesis with Latent Diffusion Models
Rombach, R., Blattmann, A., Lorenz, D., Esser, P., & Ommer, B. (2022).
This paper introduces latent diffusion models, which form the backbone of Stable Diffusion, offering efficient high-resolution image synthesis.
https://arxiv.org/abs/2112.10752

Diffusion Models Beat GANs on Image Synthesis
Prafulla Dhariwal and Alex Nichol (2021).
This paper demonstrates that diffusion models can outperform GANs in generating high-quality images, highlighting the advantages of diffusion-based approaches in image synthesis.
https://arxiv.org/abs/2105.05233

Denoising Diffusion Implicit Models
Jiaming Song, Chenlin Meng, and Stefano Ermon (2020).
This work introduces an implicit formulation of diffusion models that improves sampling efficiency, providing key insights into the mechanics of denoising diffusion processes.
https://arxiv.org/abs/2010.02502