चित्रण: An Automated Festive Poster Generator with Wishes in Nepali Language

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Outline

- Motivation
- Objectives
- Scope of Project
- Project Applications
- Proposed Methodology
- Expected Results
- Tentative Timeline
- Estimated Project Budget
- References

Motivation

- Repetitive task of poster creation for more than 50 Nepali festivals.
- Costly, tedious and inefficient traditional process
- Divert manpower to less prioritized tasks

Objectives

- To analyze input prompt to extract festival themes, then generate concise Nepali short title.
- To generate a Nepali festival-themed image and integrate it with a styled title in Nepali to create a digital poster.

Scope of Project

Capabilities

- Nepali Text Generation
- Text to Image Synthesis
- Automated Poster Design

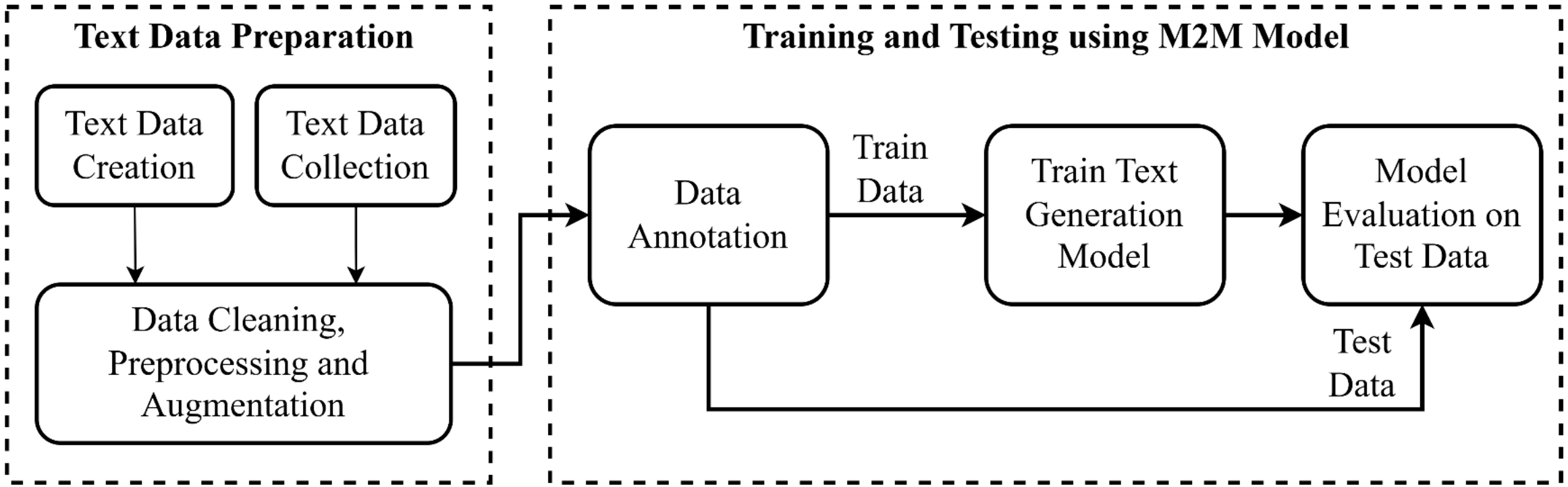
Limitations

- Only Five Festivals Poster generation
- Less diversity in text styling

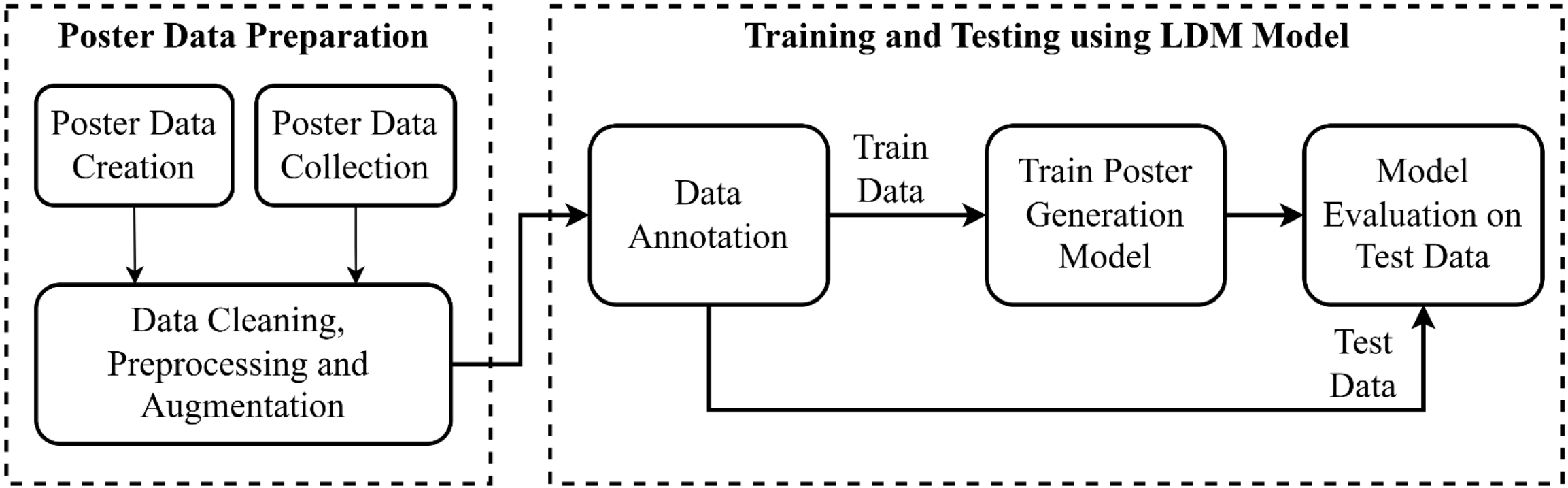
Project Applications

- Personal Use
- Business and Corporate Use
- Educational Institutions

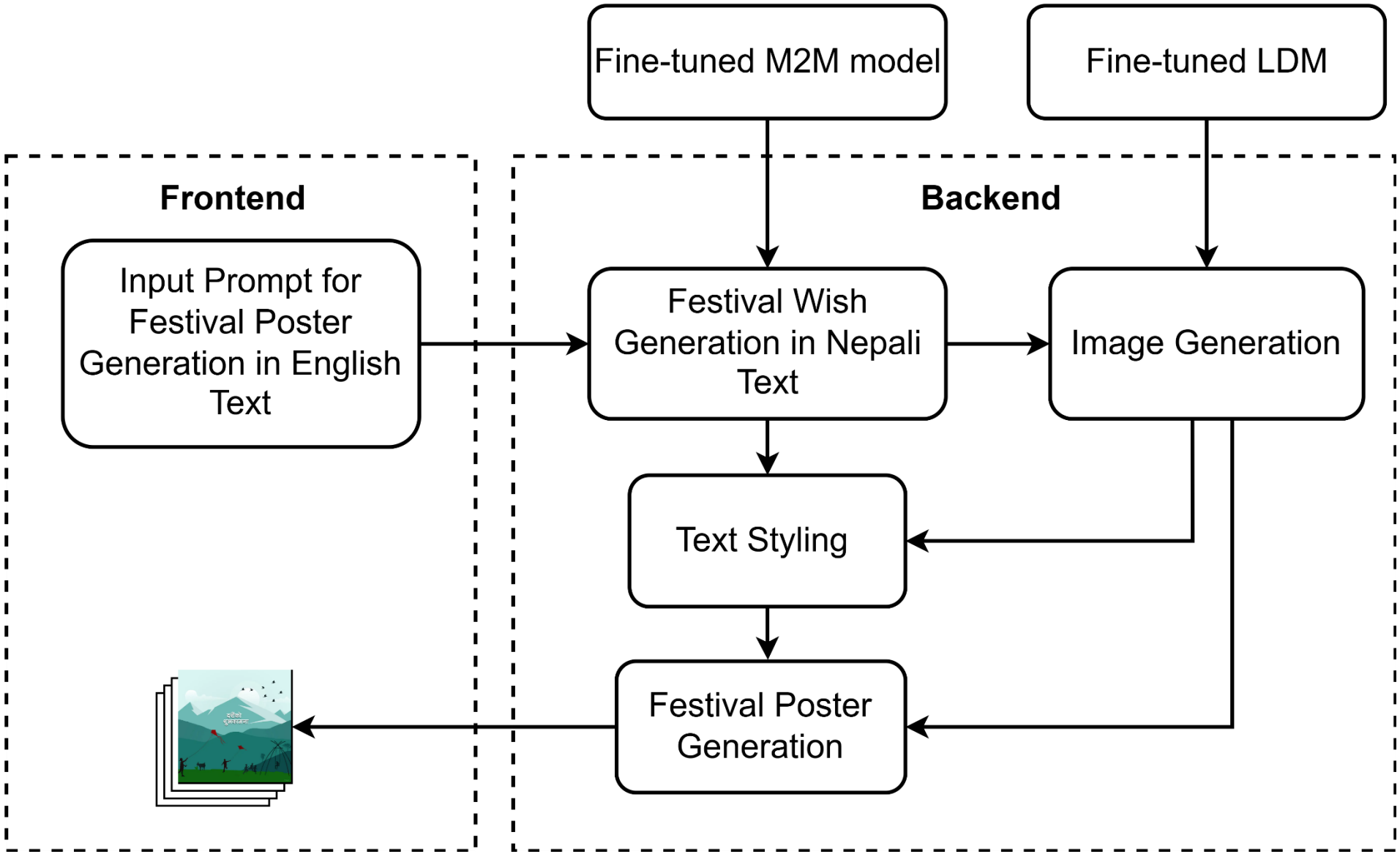
Methodology
(System Block Diagram)



Methodology [Cont.]
(System Block Diagram)



Methodology [Cont.] (System Block Diagram)



Methodology [Cont.]
(Text Dataset Preparation)

- Collected manually from different sources such as social media posters, greeting cards, and so on.
- Dataset will contain text prompt in English and its corresponding wishes in Nepali font.
- The collected dataset will then be cleaned, and augmented if needed.

Methodology [Cont.]
(Image Dataset Preparation)

- Focused on five Nepali festivals: Dashain, Tihar, Chhath, New Year, and Holi.
- Festive images are collected from various websites like Pinterest, Facebook, and Dribble.
- Any text, logo and other information will be removed.
- The image quality is enhanced.

Methodology [Cont.]
(Title Generation)

- For title generation, pretrained M2M-100 model is fine tuned on our dataset.
- BLEU score and ROUGE score is used for evaluation.
- M2M-100 model takes english prompt and generates festival wish in Nepali language.

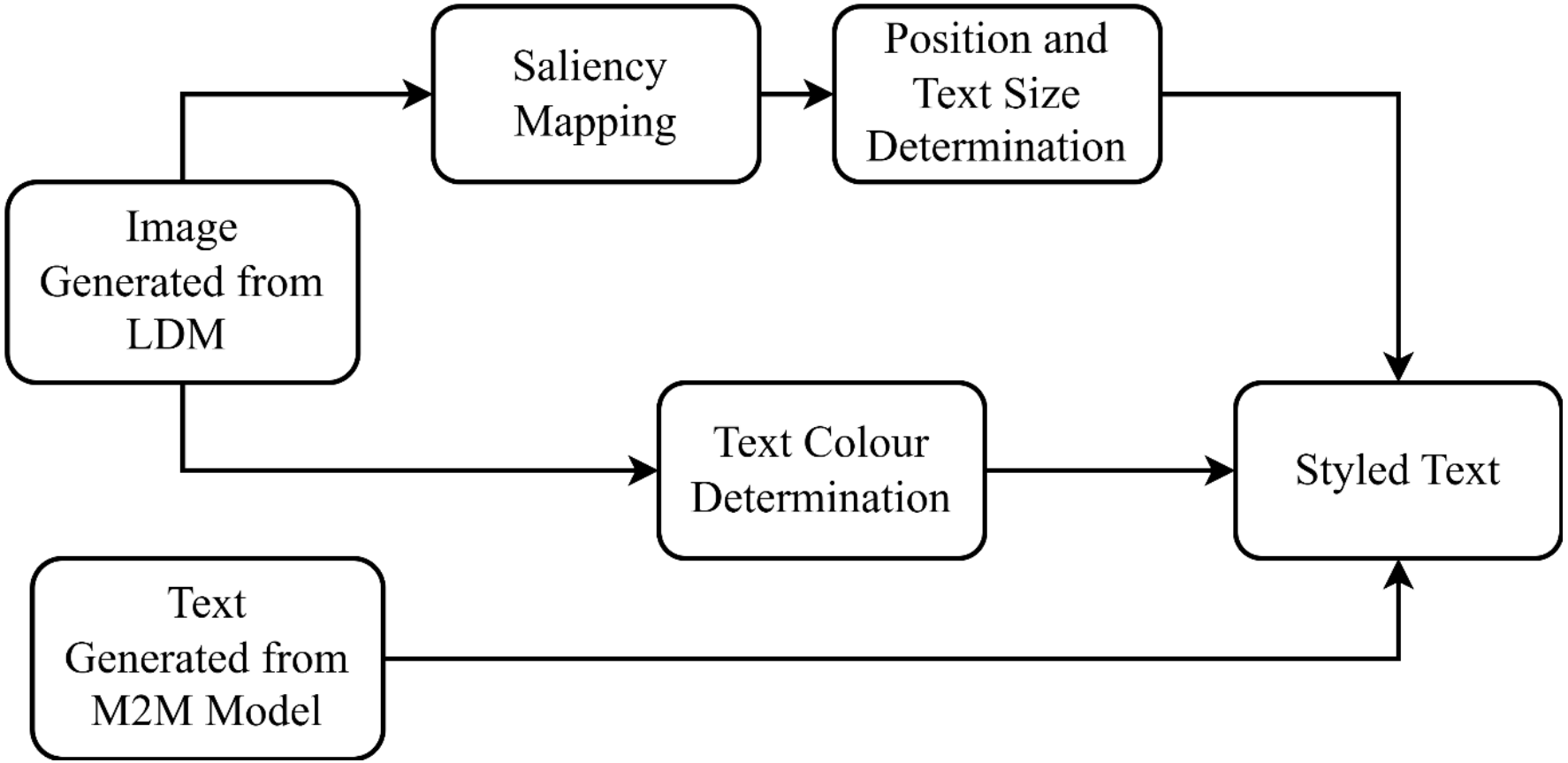
Methodology [Cont.] (Image Generation)

- Pretrained Latent Diffusion Model is fine tuned on our dataset.
- NLTK extracts theme (festival name) from the input prompt.
- Latent Diffusion Model generates festive image based on festival theme.
- FID, IS score and qualitative metrics is used for evaluation.

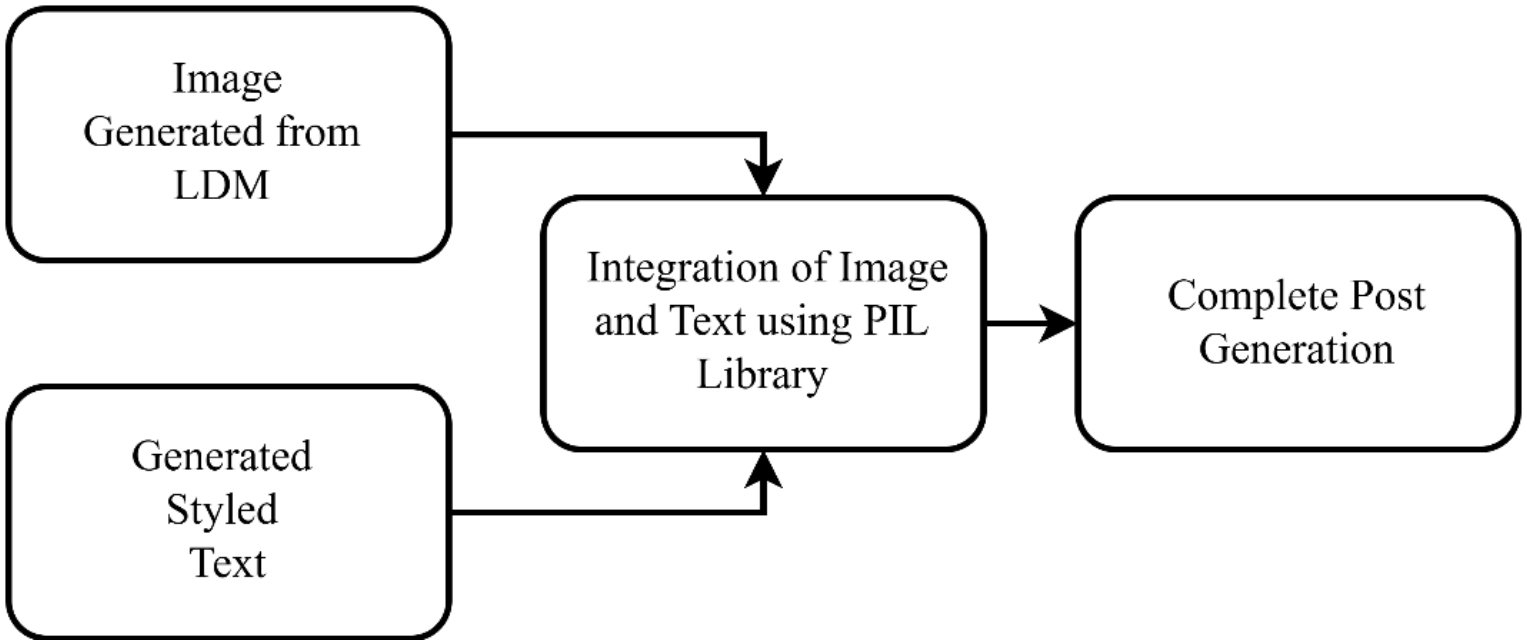
Methodology [Cont.]
(Text Styling)

- ColorThief extracts dominant colour of generated image.
- Before finalizing text color, contrast between background color and selected text color is checked.
- Saliency mapping determines ideal text placement and font size.

Methodology [Cont.] (Text Styling)



Methodology [Cont.] (Integration of Text and Image)



Methodology [Cont.]
(Software tools and library)

- PIL/ Pillow
- ColorThief
- OpenCV
- FastAPI
- NumPy
- Pandas
- ReactJS
- HTML/ CSS

Expected Results (Text Generation)

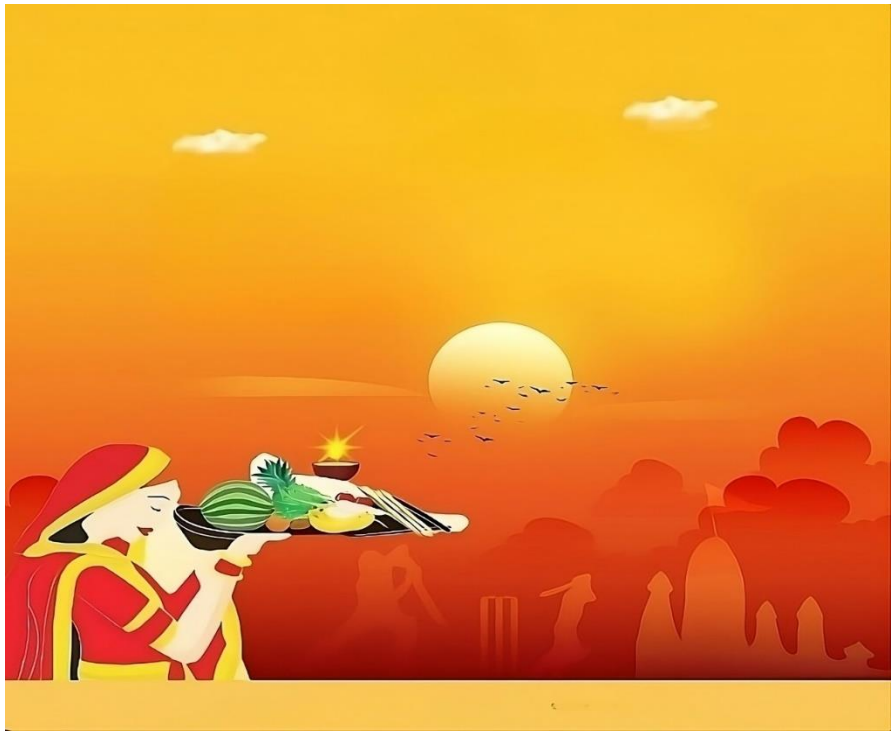
- Text Prompt:

"Make a poster wishing everyone a happy chhath.”

- Generated Wish:

“छठ पर्वको हार्दिक मंगलमय शुभकामना।”

Expected Results [Cont.] (Image Generation)

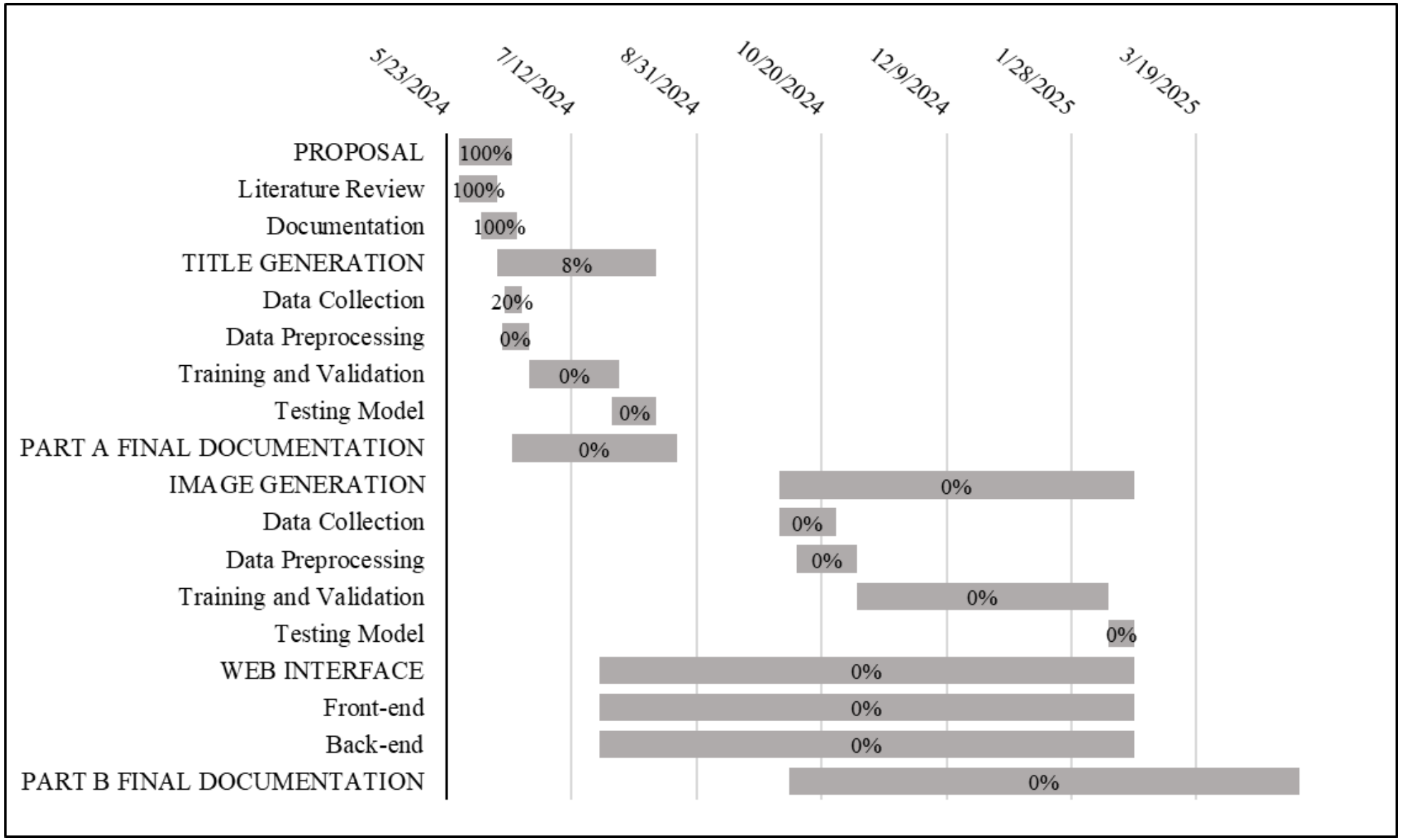


Generated Image based on festival theme

Expected Results [Cont.]
(Text and Image Integration)

Generated Text integrated in the generated image

Tentative Timeline



Estimated Project Budget

Item	**Price (NPR)**
Printing	5000.00
Colab Resource (1400 per month)	4200.00
Domain (per year)	500.00
Hosting (per year)	2000.00
Grand Total	**11,700.00**

References

[1] A. Fan et al., “Beyond english-centric multilingual machine translation,” Journal of Machine Learning Research, vol. 22, no. 107, pp. 1–48, 2021.

[2] R. Rombach, A. Blattmann, D. Lorenz, P. Esser, and B. Ommer, “High-resolution image synthesis with latent diffusion models,” in Proceedings of the IEEE/CVF conference on computer vision and pattern recognition, 2022, pp. 10684–10695.

References [Cont.]

[3] J. Lin, M. Zhou, Y. Ma, Y. Gao, C. Fei, Y. Chen, Z. Yu and T. Ge, "AutoPoster: A Highly Automatic and Content-aware Design System for Advertising Poster Generation," 2023.