

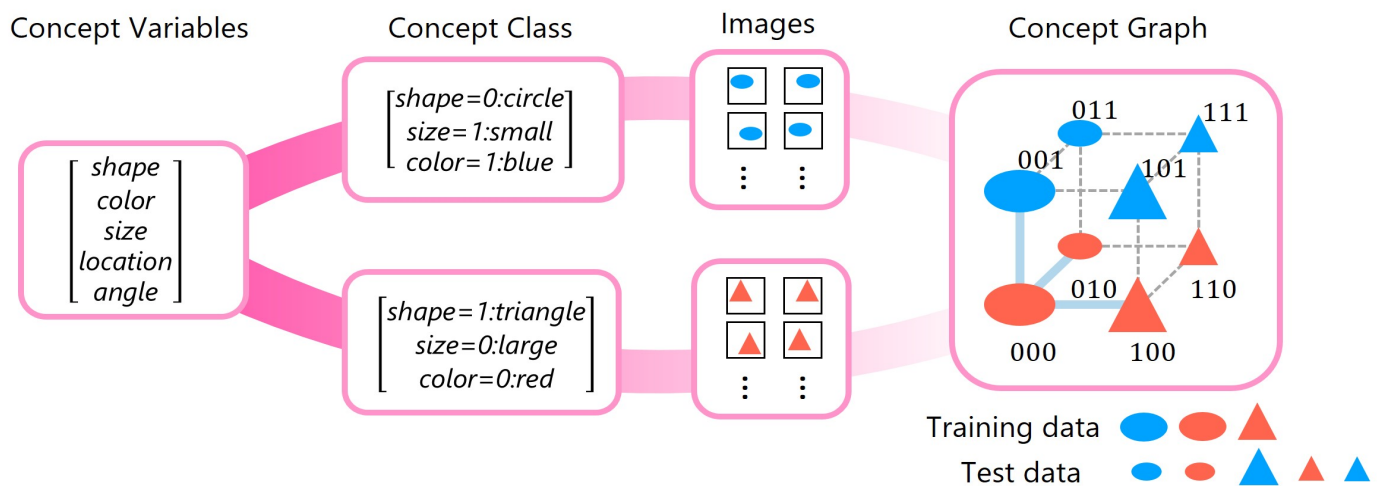


Background

As AI generative models excel in text-to-image generation, their applications are burgeoning. Yet, our comprehension of their complete capabilities remains limited, leading to concerns about safe deployment. Our research aims to deepen our understanding of these generative AI models.

Summary

We presented a simple framework to the compositional ability of the diffusion model, and found the compositional structure of the data-generation process governs how and when the compositional ability emerges.



Features

- We defined "imagination" as the ability to learn new concepts from training data and then combine those learned concepts to generate new images
- To design tasks that evaluate the 'imagination' of diffusion models, we propose a theoretical framework called "Concept Graph"
- By having the diffusion model solve simple learning tasks generated based on the Concept Graph, we assess the model's "imagination"

Future_benefits

By gaining a deeper understanding of the the ability of diffusion model, we can ensure a more effective and responsible use of diffusion models.

Collaboration partners

Harvard University, University of Michigan

Exhibiting Company

NTT Research, Inc.

Contact

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