October 2024 CIC 32 COLOR & imaging CONFERENCE

Interactive Poster Paper

Color Terms and Stable Diffusion

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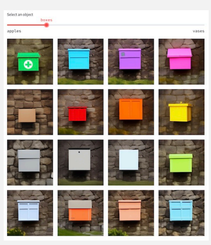
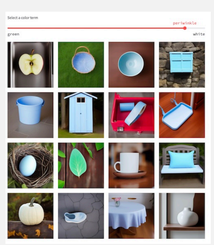
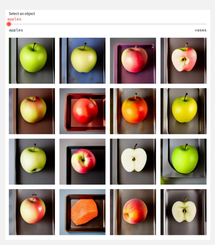
WHO: Users and developers of generative text-to-image AI

WHAT: Estimate the color vocabulary of Stable Diffusion with batch prompts & visualization

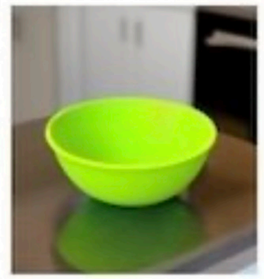
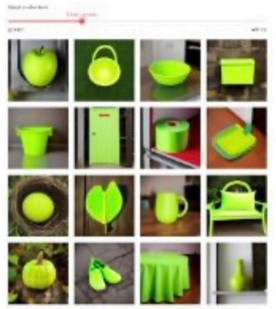
WHY: Partial automation of rendering quality of generative AI, provides benchmark and informs development

EXAMPLES : Highly consistent(left), missing periwinkles (middle) and poor consistency (right)

Data

"A lime green bowl on a kitchen counter"

1) Text Prompts (Batch)

2) Text-to-Image (Stable Diffusion 1.4)

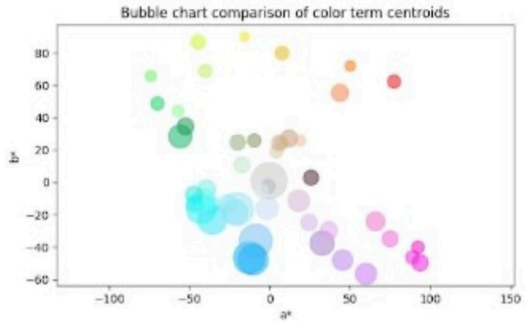
3) Results Dashboard (Streamlit)

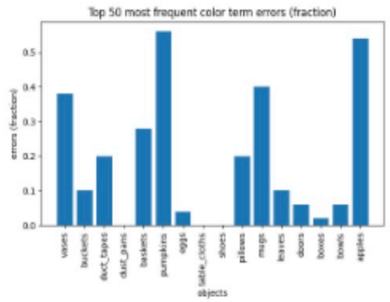
Analysis

4) Identify trends in color renderings, such as color terms more consistently reproduced across range of objects.

Results

5) Less frequent colors are rendered less consistently and results also vary by object class





Blues have larger errors. Objects like apples & pumpkins harder to color render.

Please try the interactive apps as a supplement to the technical approach and summary results.

Ongoing work includes, scaling and additional automation of the analysis.

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