

G-Data Pilot Study

Version 2.2 Submitted 11-18-22

Measuring Preference among Stable Diffusion Output

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Presentation Content



- Background & Methodology
- Results & Analysis
- Evaluating Biosensors
- Summary and Conclusions

Background



Explore patterns in personal preference among images generated by Stable Diffusion using biometrics.

Final Desired Output:

- Biometric data correlated to an individual's preference.

- Text data for Natural Language Processing.

Background



Respondents

Demographics:

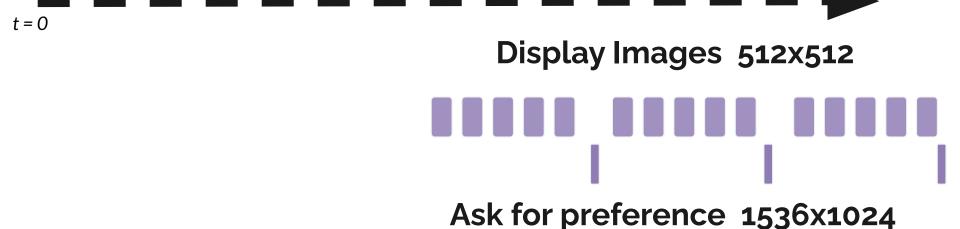
- 9 Participants: 5W, 4M
- Mean Age: 39.09 yrs

Methodology



Pre-Test Questionnaire
Q1 Q2 Q3

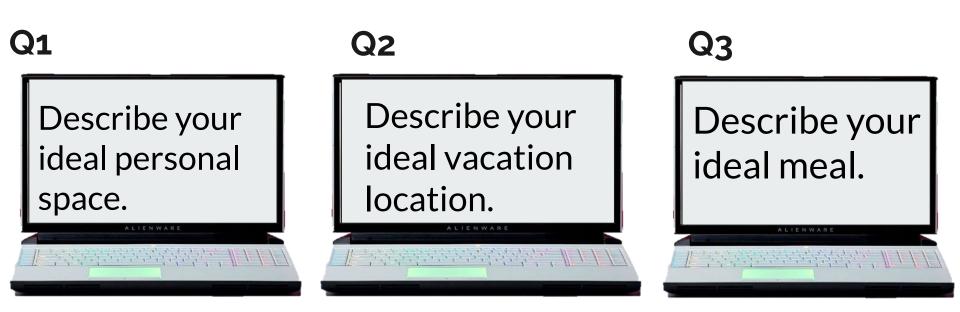
Generate Images



Methodology



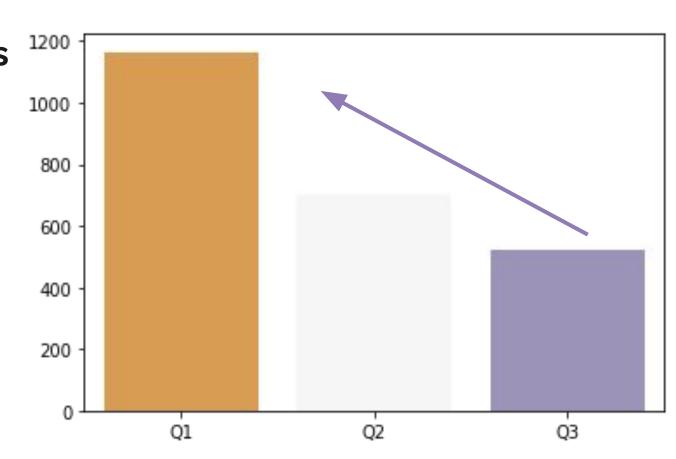
Individual is asked to answer 3 questions.



Word Count per Question



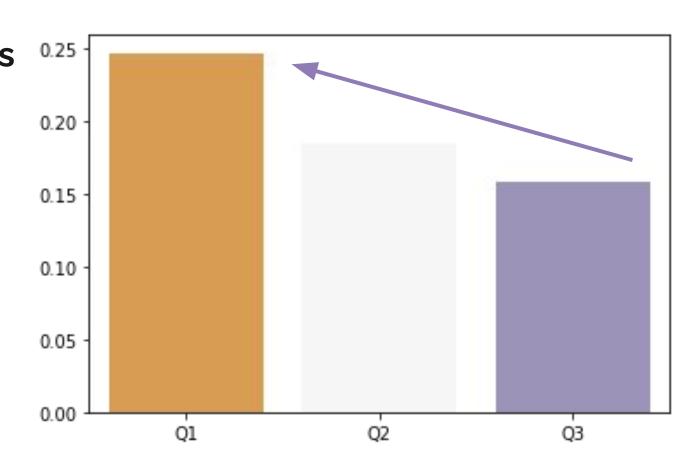
Question 1 elicits most lengthy responses overall.



Sentiment Score per Question



Question 1 elicits most positive responses overall.



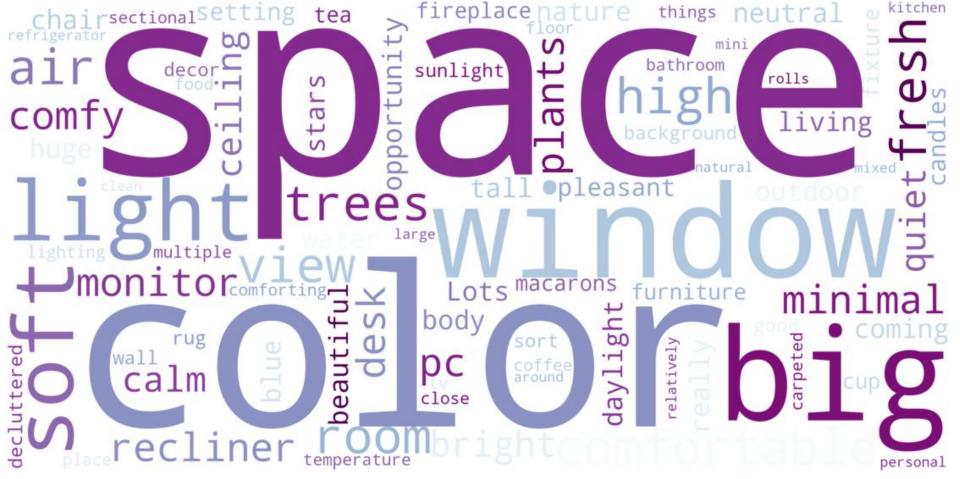


Q1

"Describe your ideal personal space."

"Describe your ideal personal space."





Run Stable Diffusion

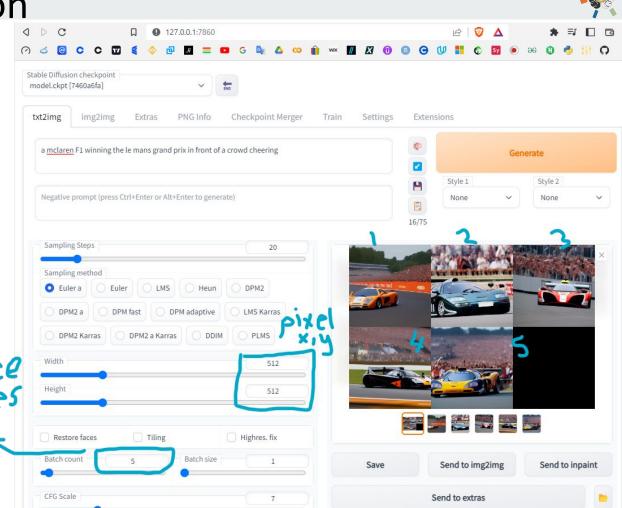


Six Images Produced

Five 512x512 images.

One 1536x1024
pixel image.

5 images



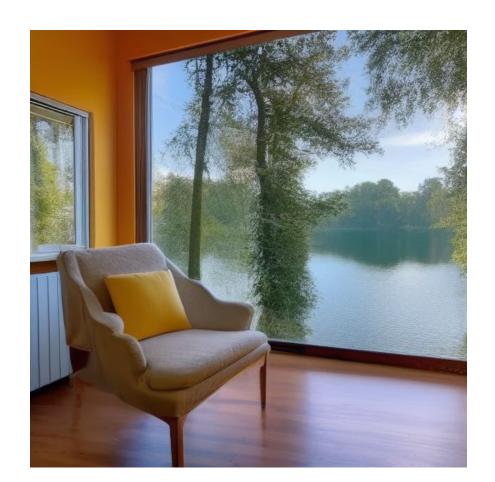
Ideal Personal Space

Og-



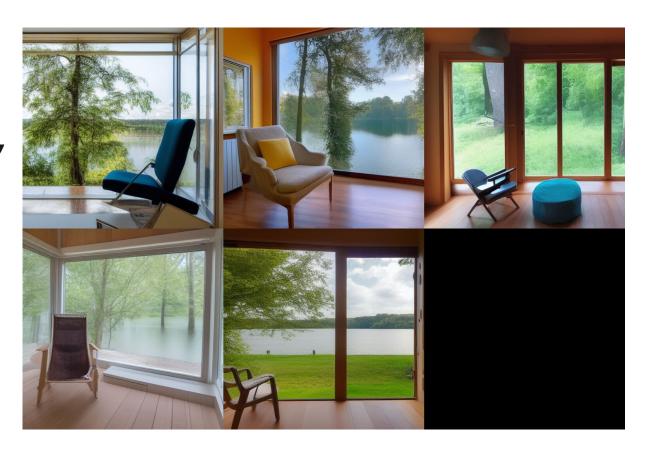
Ideal Personal Space

(S)2



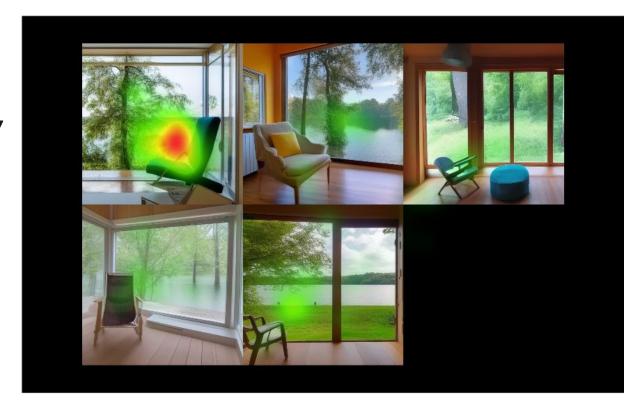
Ideal Personal Space





Ideal Personal Space: Eye Tracking Heat Map

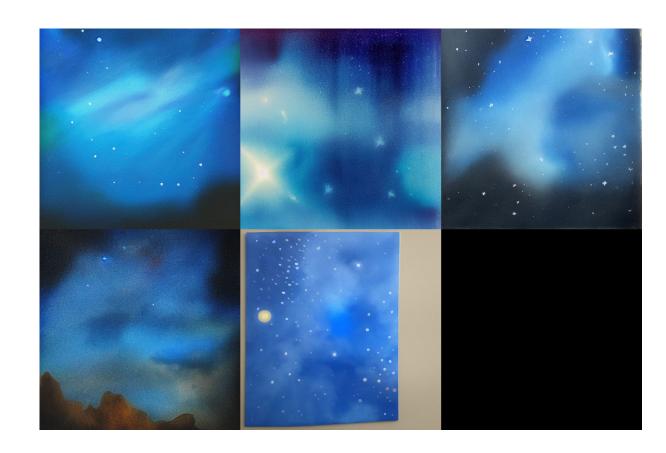




Ideal Personal Space: Eye Tracking Heat Map



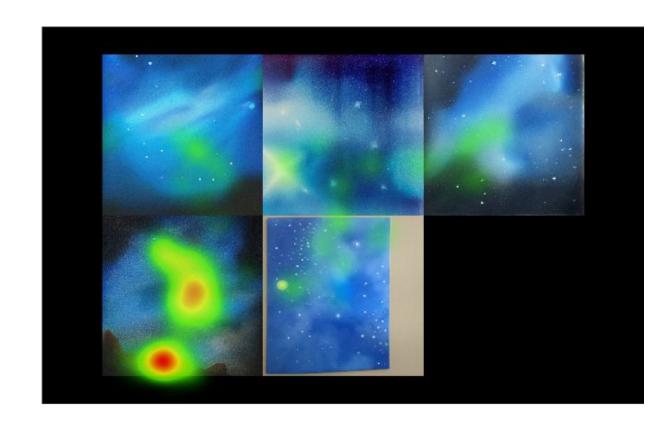
" A blue space with nature and stars."



Ideal Personal Space: Eye Tracking Heat Map



" A blue space with nature and stars."





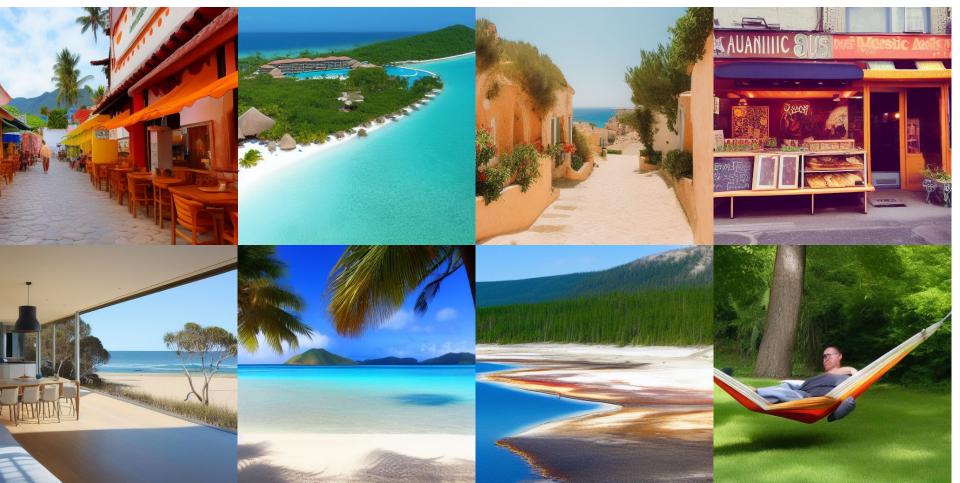
Q2

"Describe your ideal vacation location."

"Describe your ideal vacation location." clear sand inclusive city

Ideal Vacation Location

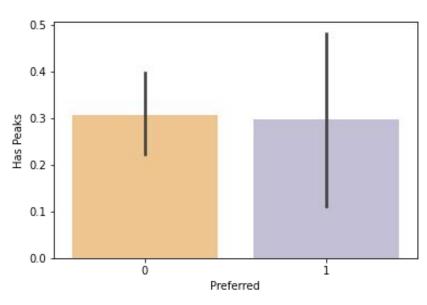


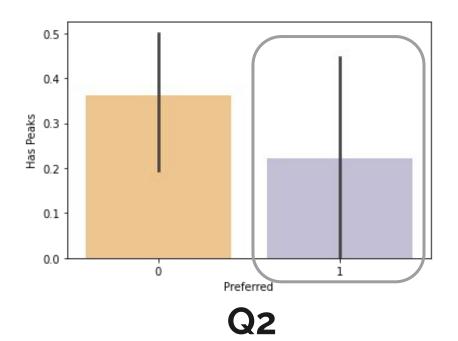


Ideal Vacation Location: GSR



Preferred class less likely to have a peak in Q2 compared to all questions





All Questions

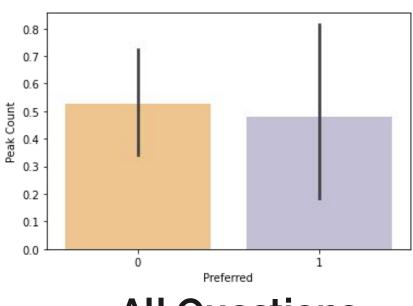
Ideal Vacation Location: GSR



Preferred class showed lower peak count in Q2 compared to all questions

1.0

0.8



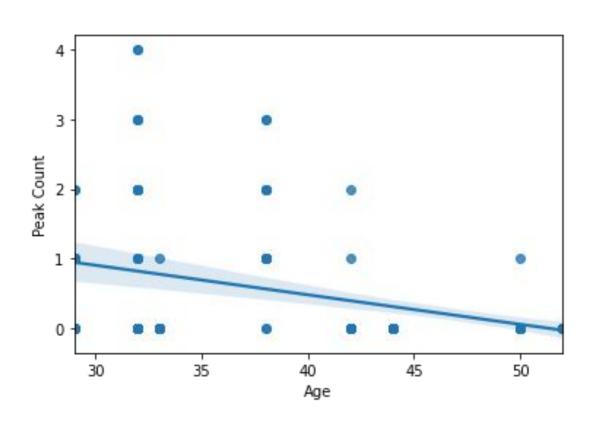
0.6 - 0.4 - 0.2 - 0.0 -

All Questions

Total Peak Count & Age



Peak Count and slight negative relationship to Age





Q3

"Describe your ideal meal."



Ideal Meal

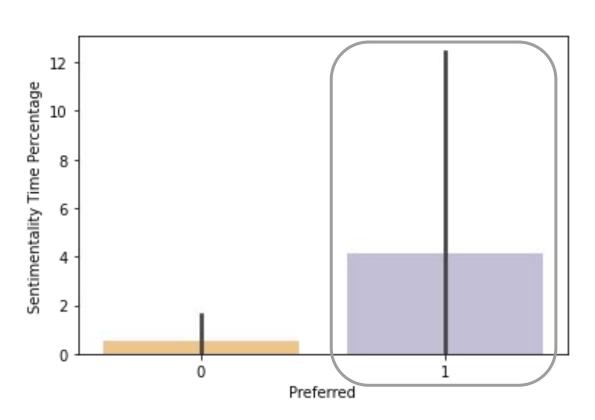




Ideal Meal: FEA

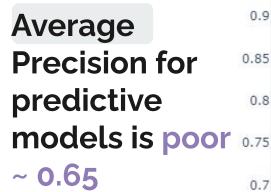


Preferred class showed slight increase in **Sentimentality** Time **Percentage**

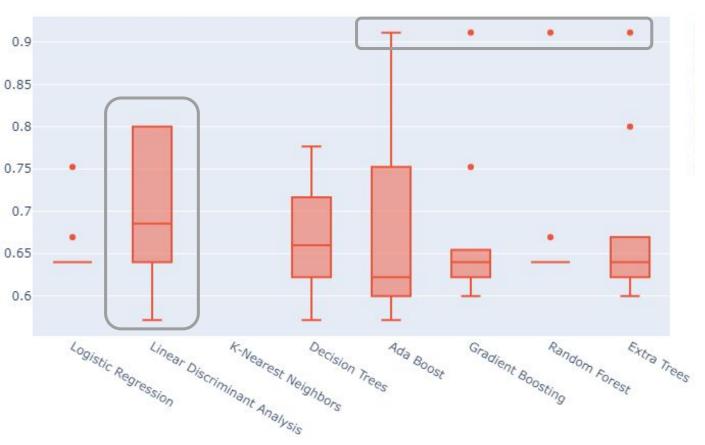


Measuring Precision for Classifiers





Some samples showed better results ~ 0.91

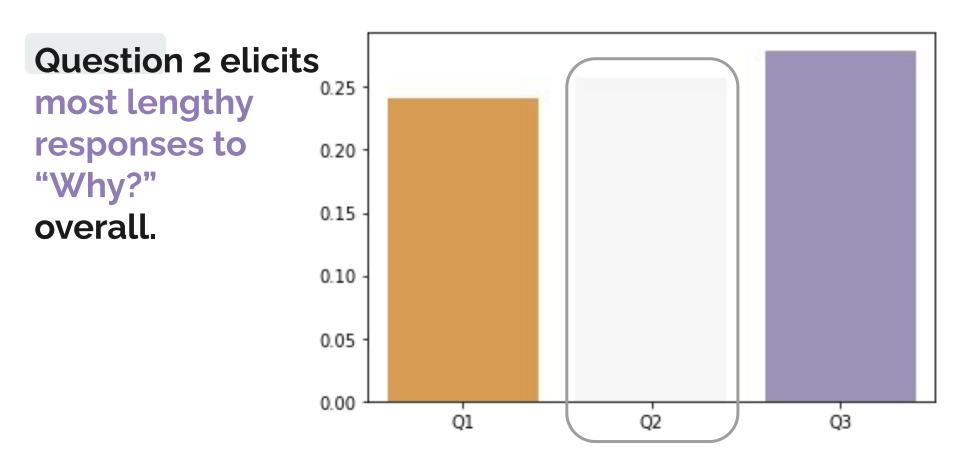




"Why?"

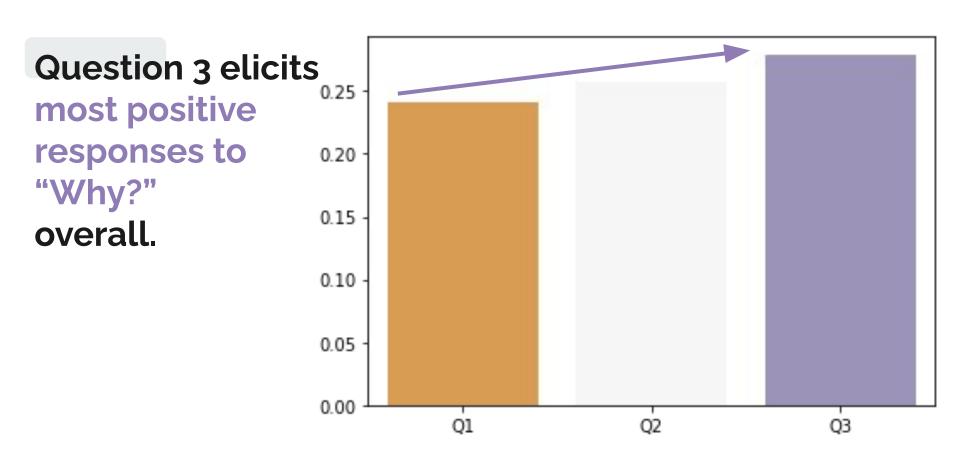
Why: Word Count





Why: Sentiment





"Why is it your ideal personal space?" whats

"Why is it your ideal vacation location?" balanced mountain face many green much idea area Oseem **w** makes made feel view dynamic blue shade Street visible

"Why is it your ideal meal?" decent

Evaluation of the Sensors



			GSR
Data Richness	Setup Interpretability	Setup Interpretability	Setup Interpretability
Time, Sensitivity, Notebooks	Correlation	Participant movement	Lower data output

Next Steps



- Analyze Frontal Alpha Asymmetry
- Optimize image generation based on preference
- Explore Video generation
- Collect more data to improve predictive performance

Summary & Conclusions



Initial Correlations to Preference:

- Sentimentality Time Percentage (FEA)
- Peak Count (GSR)
- Eye Fixation Time (ET)

It is clear more data is needed for better predictive performance.



Thank You!

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