

Towards latent representations of gloss in complex stimuli using unsupervised learning

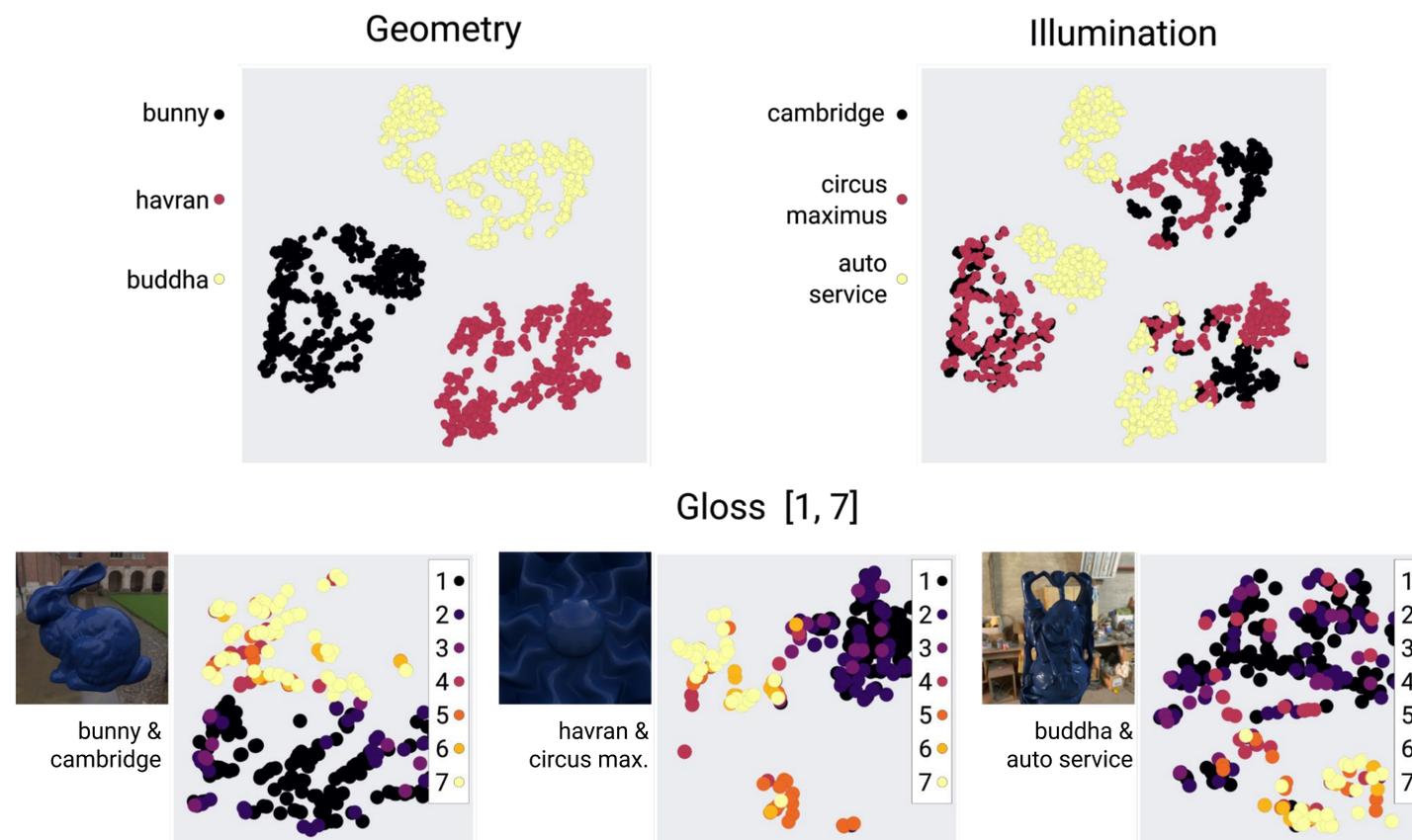
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TAKE-HOME MESSAGES

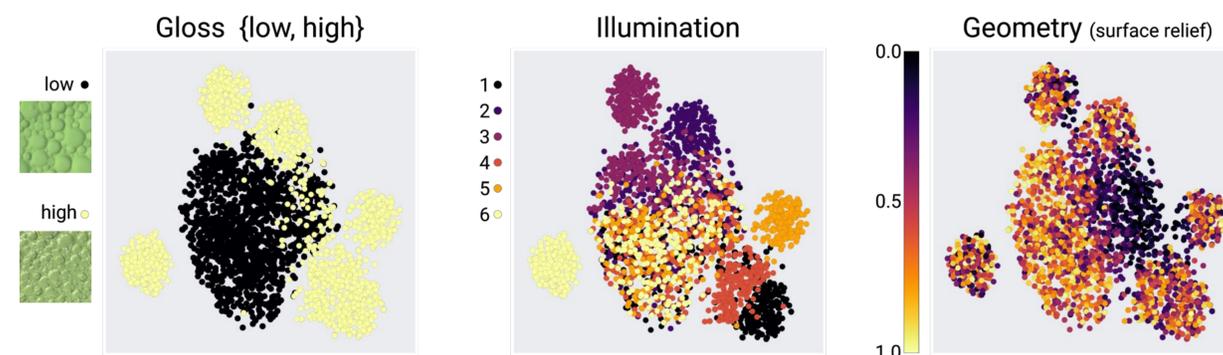
- Recent literature [Storrs et al. 2021] has shown how unsupervised learning can find perceptually meaningful latent representations of material appearance from simple stimuli of abstract bumpy surfaces
- In this work, we show how unsupervised learning may help to understand human visual perception of material appearance, even for complex stimuli
- Complex stimuli are clustered hierarchically, with geometry as the most relevant factor, followed by illumination
- Additionally, for a fixed geometry and illumination, our representations are reasonably organized with respect to human perception of gloss

RESULTS

COMPLEX STIMULI

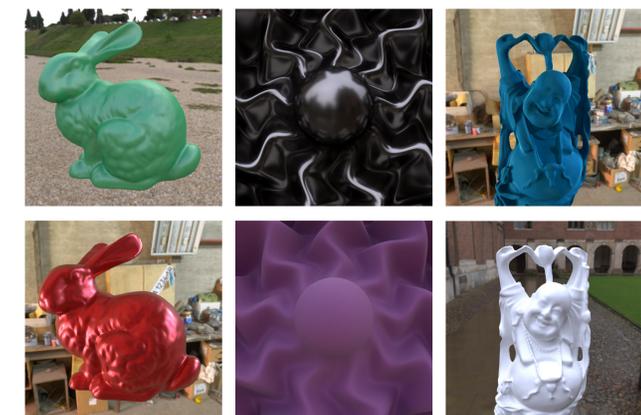


SIMPLE STIMULI [Storrs et al. 2021]



DATASET

- Complex stimuli:
 - Real-world geometries and environment maps
 - Over 300 measured materials



[Serrano et al. 2021]

REFERENCES

- [Storrs et al. 2021] Storrs, K. L., Anderson, B. L., & Fleming, R. W. (2021). Unsupervised learning predicts human perception and misperception of gloss. *Nature Human Behaviour*, 5, 10, 1402–1417
- [Serrano et al. 2021] Serrano, A., Chen, B., Wang, C., Piovarci, M., Seidel, H. P., Didyk, P., & Myszkowski, K. (2021). The effect of shape and illumination on material perception: model and applications. *ACM Transactions on Graphics (TOG)*

ACKNOWLEDGMENTS

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