Supplemental Material for Luminance-Contrast-Aware Foveated Rendering

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CCS Concepts: • **Computing methodologies → Perception**; **Rendering**; **Image manipulation**.

Additional Key Words and Phrases: foveated rendering, perception

In Table 1 below, we provide a detailed list of parameter values obtained from optimization and corresponding training and cross-validation errors for our model. Figure 1 shows the full set of images which are used in our perceptual experiments with GLSL implementation. Due to space constraints, a selected subset of these results are shown in Figure 10 of our paper. In Figure 2, we show the effect of content on the detection threshold for foveated quality degradation. These plots provide the change in the mean and standard deviation of $\sigma_s^{(i)}$ for each patch as a function of eccentricity from the data collected in our subjective experiment for model calibration.

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Table 1. Optimal parameter values obtained during calibration and corresponding cross-validation errors.

		Parameters								Loss Function		MAE	
Full Resolution	CV-Fold	α	β	c_a	s_4	s_8	s_{16}	s_{32}	ω	Train	Test	Train	Test
	1	0.46	0.16	0.04	5.62	6.00	7.48	6.06	1.89	0.62	0.79	0.50	0.26
	2	0.57	0.13	0.04	4.50	6.01	3.60	4.00	1.81	0.73	0.86	0.65	0.63
	3	0.53	0.28	0.04	6.31	5.90	7.82	6.12	1.76	0.62	0.56	0.51	0.53
	4	0.48	0.23	0.02	4.66	6.51	2.12	8.00	1.48	0.65	0.60	0.56	0.57
	5	0.54	0.29	0.04	6.29	5.93	7.81	5.96	1.82	0.58	0.75	0.48	0.70
	6	0.49	0.24	0.04	6.47	6.04	7.99	6.25	1.87	0.59	0.66	0.50	0.60
	All data	0.61	0.39	0.04	6.30	5.55	7.48	7.95	1.59	0.61	-	0.51	-
Downscaled	1	0.57	0.11	0.04	4.94	5.89	3.81	4.00	1.16	0.74	0.88	0.60	0.33
	2	0.55	0.12	0.04	4.85	6.09	2.99	4.00	1.67	0.69	0.94	0.59	0.61
	3	0.55	0.13	0.04	5.37	6.23	4.07	4.07	1.63	0.72	0.65	0.62	0.61
	4	0.56	0.13	0.04	5.27	6.17	3.18	3.31	1.53	0.70	0.74	0.61	0.72
	5	0.55	0.13	0.04	5.38	6.24	4.11	4.07	1.62	0.68	0.84	0.58	0.75
	6	0.52	0.11	0.04	5.38	6.43	3.27	4.87	1.64	0.69	0.80	0.58	0.72
	All data	0.55	0.14	0.04	5.29	6.23	3.40	4.01	1.55	0.71	-	0.55	-

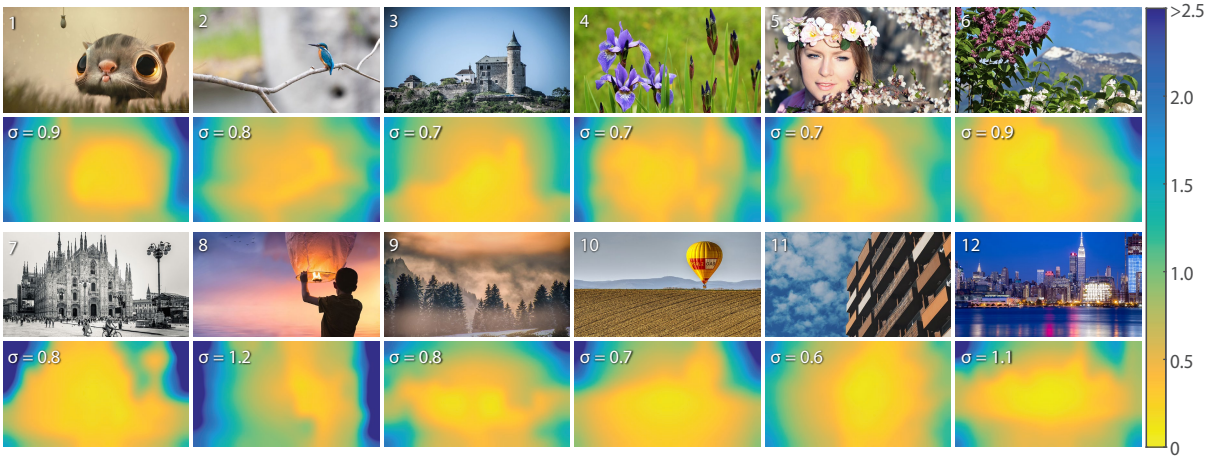

Fig. 1. The stimuli that is used in the perceptual experiments using GLSL implementation and corresponding predictions from our method.

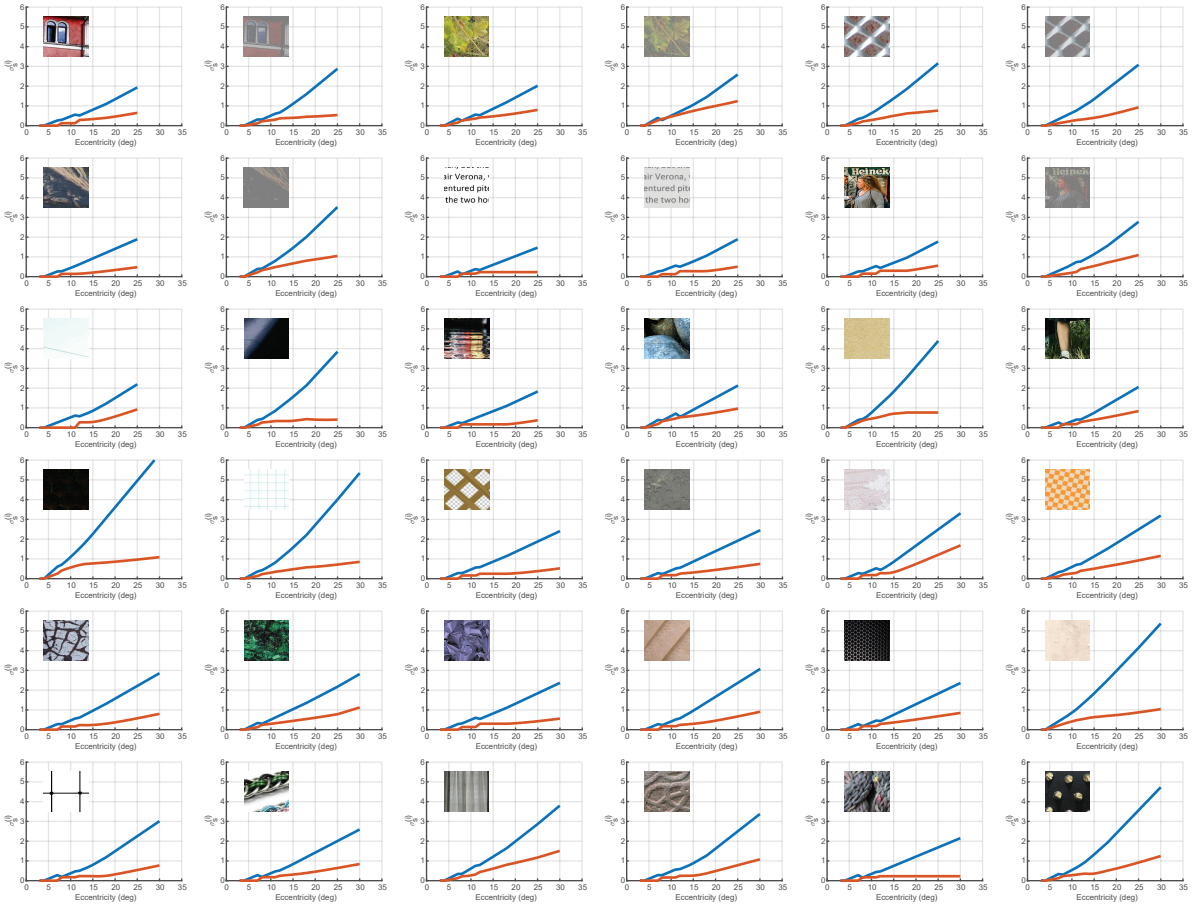

Fig. 2. These plots show how $\sigma_s^{(i)}$ (y-axis) changes with respect to eccentricity (x-axis) for each patch. The lines represent the mean (blue) and the standard deviation (red) for the given patch across all participants.