

Supplemental Material for Luminance-Contrast-Aware Foveated Rendering

OKAN TARHAN TURSUN, Max Planck Institute for Informatics

ELENA ARABADZHIYSKA-KOLEVA, Saarland University, MMCI and Max Planck Institute for Informatics

MAREK WERNIKOWSKI, West Pomeranian University of Technology

RADOSŁAW MANTIUK, West Pomeranian University of Technology

HANS-PETER SEIDEL, Max Planck Institute for Informatics

KAROL MYSZKOWSKI, Max Planck Institute for Informatics

PIOTR DIDYK, Università della Svizzera Italiana

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.

Authors' addresses: Okan Tarhan Tursun, Max Planck Institute for Informatics, okan.tursun@mpi-inf.mpg.de; Elena Arabadzhyska-Koleva, Saarland University, MMCI, Max Planck Institute for Informatics, earabadz@mpi-inf.mpg.de; Marek Wernikowski, West Pomeranian University of Technology, mwernikowski@wi.zut.edu.pl; Radosław Mantiuk, West Pomeranian University of Technology, rmantiuk@wi.zut.edu.pl; Hans-Peter Seidel, Max Planck Institute for Informatics, hpseidel@mpi-inf.mpg.de; Karol Myszkowski, Max Planck Institute for Informatics, karol@mpi-inf.mpg.de; Piotr Didyk, Università della Svizzera Italiana, piotr.didyk@usi.ch.

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

		Parameters								Loss Function		MAE	
		α	β	c_a	s_4	s_8	s_{16}	s_{32}	ω	Train	Test	Train	Test
Full Resolution	CV-Fold												
	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	-

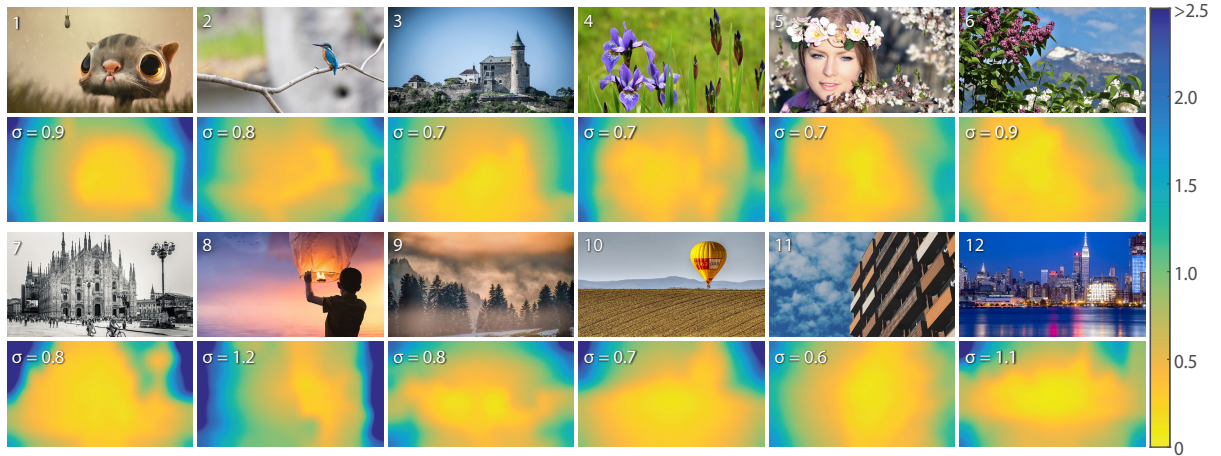


Fig. 1. The stimuli that is used in the perceptual experiments using GLSL implementation and corresponding predictions from our method.

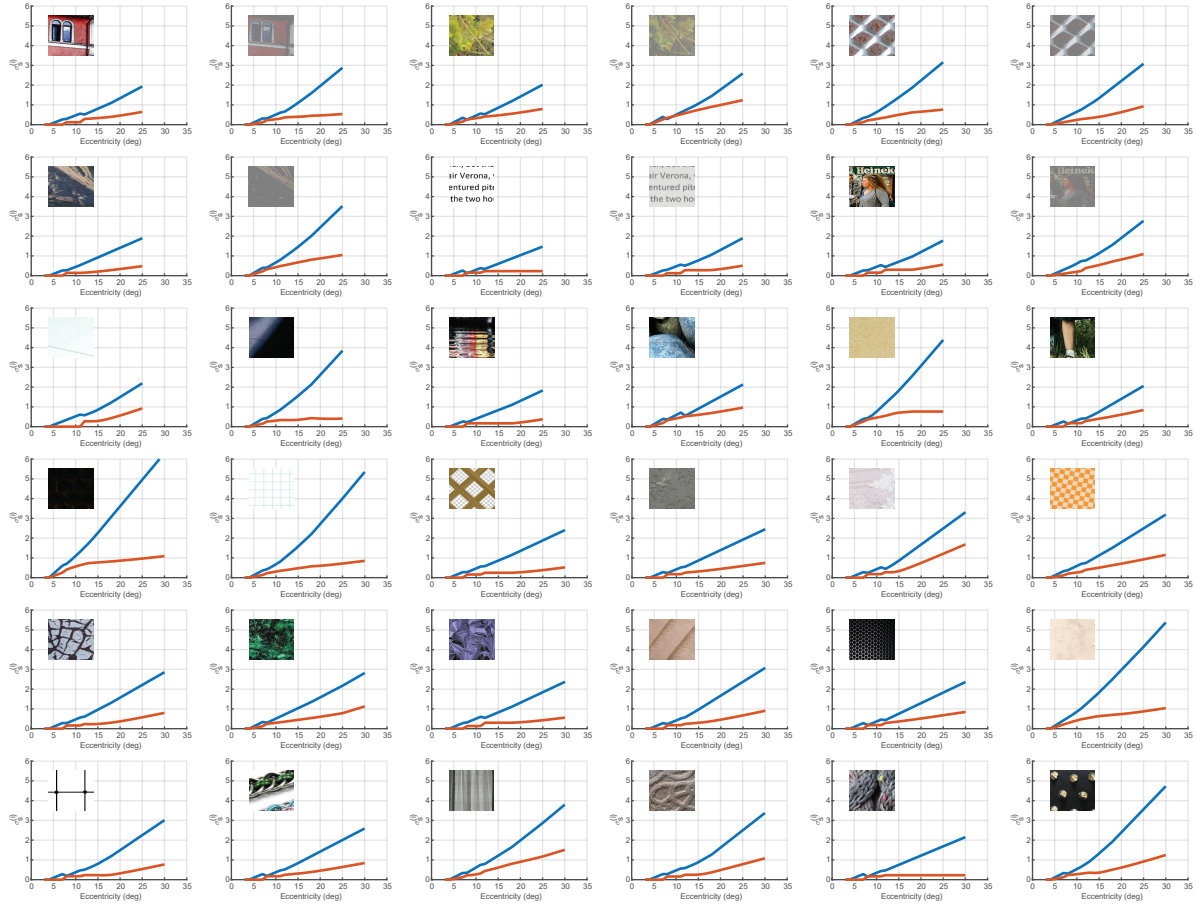


Fig. 2. These plots show how $\sigma_s^{(i)}$ (y -axis) changes with respect to eccentricity (x -axis) for each patch. The lines represent the mean (blue) and the standard deviation (red) for the given patch across all participants.