

QuickETC2: Fast ETC2 Texture Compression using Luma Differences - Supplemental Document

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1 TEST IMAGE SET, IMAGE COURTESY, AND ARTIFACT ANALYSIS

This supplemental document aims to provide characteristics of the test images and to further analyze the compression quality of *QuickETC2* compared to *ETCPACK*. First, we describe the 64 textures used in our experiments. We carefully chose the image set in Figure 1 to represent different texture types as follows:

- No. 1-24: 24 photographs from Kodak Lossless True Color Image Suite (*Kodim01-Kodim24*) [Franzen 1999]. Images courtesy of Kodak.
- No. 25: One photo from the PVRTC paper [Fenney 2003] (*Lorikeet*). Image courtesy of Fenney.
- No. 26-45: 20 game textures from the Crytek Sponza model. Images courtesy of Crytek.
- No. 46-50: Five game textures from the FasTC project [Krajevski and Manocha 2014]. Images courtesy of the UNC GAMMA Lab and Spiral Graphics.
- No. 51: One 2D sprite from Vokselia Spawn. Downloaded from McGuire's Computer Graphics Archive [McGuire 2017]. Image courtesy of Vokselia.
- No. 52-54: Three GIS map data from the FasTC project. Images courtesy of the UNC GAMMA Lab and Google.
- No. 55: One GIS map data from Cesium [Bagnell 2017]. Image courtesy of Cesium.
- No. 56: One synthesized image from Google Android (*Jelly*) [Nishry 2015]. Image courtesy of Google.
- No. 57: One synthesized image from the FasTC project (*Gradient*). Image courtesy of the UNC GAMMA Lab and Spiral Graphics.
- No. 58-64: Seven images captured from the real world for 3D reconstruction (*Bedroom*). Downloaded from McGuire's Computer Graphics Archive. Images courtesy of *fherman* at Sketchfab.

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Furthermore, we describe an artifact analysis table (Table 1) for analyzing representative artifacts shown in each image. The results in the table imply that *QuickETC2* provides sufficient compression quality, especially for game textures, except for a few corner cases.

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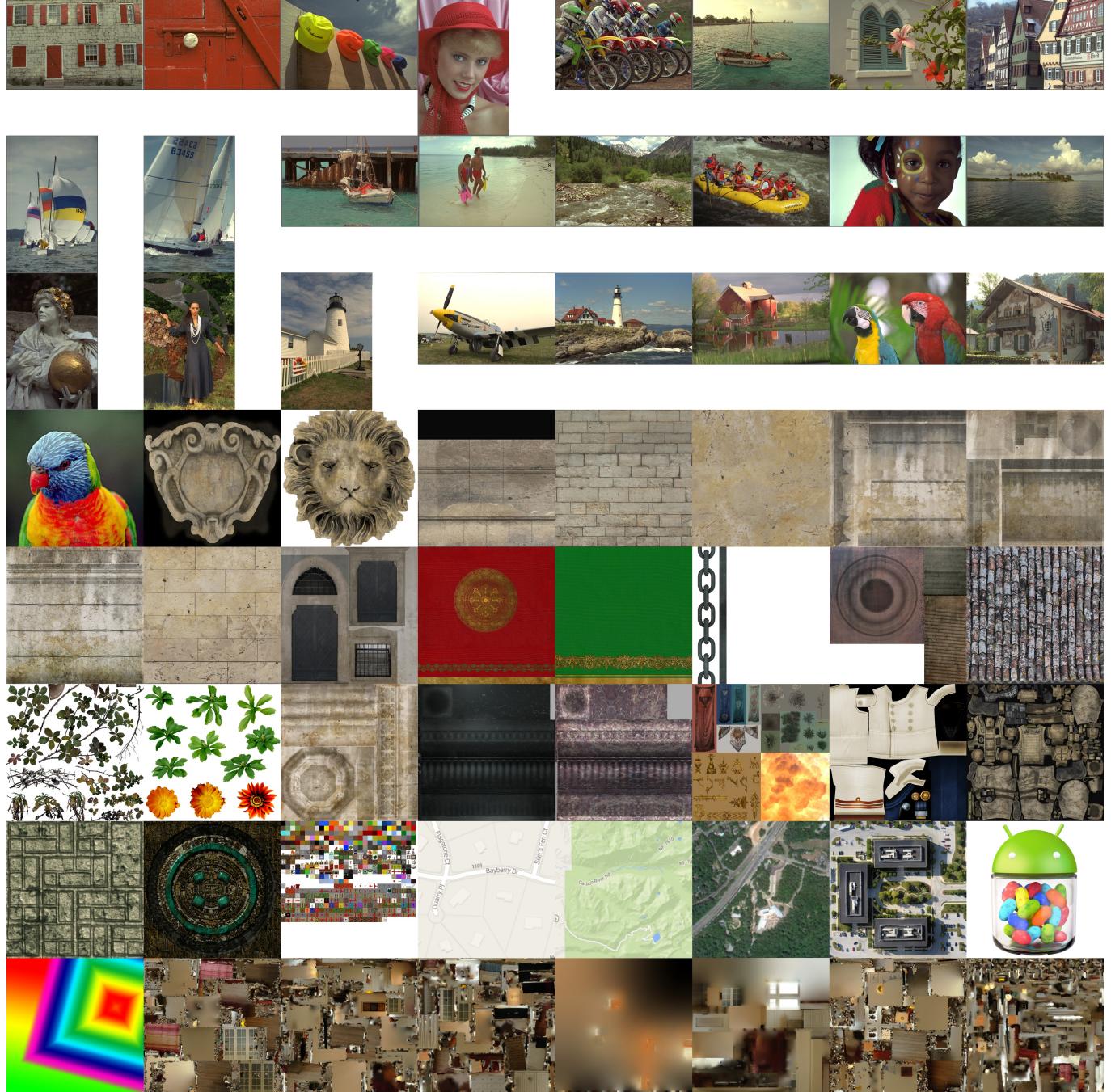


Fig. 1. The entire set of 64 test images. This image set represents different texture types: photographs (No. 1-25), game textures (No. 26-51), GIS map data (No. 52-55), synthesized images (No. 56-57), and images captured from the real world for 3D reconstruction (No. 58-64). ©Kodak, Fenney, Crytek, UNC GAMMA Lab, Spiral Graphics, Vokeselia, Google, Cesium, and *fherland*.

Table 1. Our artifact analysis table. The left and right symbols in each cell indicate artifacts that appear in ours and *ETCPACK*, respectively. Also, we express the degree of each artifact as three levels: none (–), low (○), and high (●). Low-degree artifacts are usually distinguishable in a one-to-one comparison between the uncompressed and compressed images after zooming in on the images. High-degree artifacts are easily visible without the one-to-one comparison or zooming in.

No	Name	Block artifacts	Blurring	Banding	Color shifts	Loss of smooth AA/gradients	No	Name	Block artifacts	Blurring	Banding	Color shifts	Loss of smooth AA/gradients
1	Kodim01				○/○	○/○	33	Sponza_column_c_diff				○/○	
2	Kodim02	○/–			○/○		34	Sponza_floor_a_diff				○/○	
3	Kodim03	○/○			○/○		35	Sponza_details_diff				○/○	○/○
4	Kodim04	○/○			○/○		36	Sponza_curtain_diff				○/○	
5	Kodim05	●/○			○/○	○/○	37	Sponza_fabric_green_diff				○/○	○/○
6	Kodim06	○/○			○/○		38	Chain_texture				○/○	
7	Kodim07	○/–			○/○		39	Sponza_flagpole_diff				○/○	
8	Kodim08				○/○	○/○	40	Sponza_roof_diff				○/○	
9	Kodim09				○/○	○/○	41	Sponza_thron_diff				○/○	
10	Kodim10	○/○			○/○		42	Vase_plant	●/–			○/–	
11	Kodim11				○/○	○/○	43	Vase_diff				○/○	
12	Kodim12				○/○	○/○	44	Vase_hanging				○/○	
13	Kodim13						45	Vase_round				○/○	
14	Kodim14	○/–			○/○		46	Atlas	○/–			○/○	○/○
15	Kodim15	○/○			○/○		47	Small-char	○/○			○/○	
16	Kodim16				○/○		48	Big-char				○/○	
17	Kodim17				○/○	○/○	49	Bricks				○/○	
18	Kodim18				○/○	○/○	50	Un512				○/○	
19	Kodim19				○/○	○/○	51	Vokselia_spawn				○/○	
20	Kodim20	○/○			○/○	○/○	52	Vector-streets				○/○	
21	Kodim21	○/○			○/○	○/○	53	Mountains				○/○	
22	Kodim22	○/○			○/○	○/○	54	Satellite				○/○	
23	Kodim23	○/–			○/○	○/○	55	CesiumJS				○/○	
24	Kodim24				○/○	○/○	56	Jelly	●/○			○/○	
25	Lorikeet	○/–			○/–		57	Gradient256					
26	Background				○/○		58	ISCV2_u1_v1				○/○	
27	Lion				○/○		59	ISCV2_u1_v2				○/○	
28	Sponza_arch_diff				○/○		60	ISCV2_u2_v1				○/○	
29	Sponza_bricks_a_diff				○/○		61	ISCV2_u2_v2				○/○	○/○
30	Sponza_ceiling_a_diff				○/○		62	ISCV2_u2_v4				○/○	
31	Sponza_column_a_diff				○/○		63	ISCV2_u3_v1				○/○	
32	Sponza_column_b_diff				○/○		64	ISCV2_u4_v1				○/○	