Video quality between Douyin and Muse

1. Tool

- o StreamEye on mac
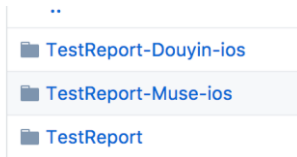
  https://www.elecard.com/software

- o Parser scripts for mp4 video bit stream encoded parameters

  https://github.com/shihuade/MultiMedia-Scripts/tree/master/StreamEye

2. Test data

https://github.com/shihuade/MultiMedia-Scripts/tree/master/StreamEye

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📁 TestReport-Douyin-ios

📁 TestReport-Muse-ios

📁 TestReport

3.   Test summary for Android

3.1 Summary

Generated by:

https://github.com/shihuade/MultiMedia-Scripts/blob/master/StreamEye/run_CalculateAverage.sh

EncodeParam	Douyin	Muse	Ratio(Muse/Douyin)
Resolution	540x960	368x640	2.20
MP4FileSize	1.43	3.63	5.58
VideoPSNR	40.24	36.34	0.90
FrameNumAll	51.35	72.67	1.42
FrameNumI	1.77	5.11	2.89
FrameNumP	94.44	321.11	3.40
FrameNumB	81.22	0	0.00
FrameNumRatioI	0.44	0.72	1.64
FrameNumRatioP	52.66	98.41	1.87
FrameNumRatioB	46.12	0	0.00
FrameSizeAll	1331830.44	3609888.88	5.96
FrameSizeI	99050.44	202127.44	4.49
FrameSizeP	1037762.55	3407761.44	7.22
FrameSizeB	195017.44	0	0.00
FrameSizeRatioI	7.58	5.83	0.77
FrameSizeRatioP	77.38	94.16	1.22
FrameSizeRatioB	15.02	0	0.00
FrameCompressedRatio	113.82	34.7	0.14
FrameCompressedRatioI	21.86	9.33	0.19
FrameCompressedRatioP	79.95	36.33	0.21
FrameCompressedRatioB	328.86	0	0.00
FrameSizeAvg	8020.45	10936.77	3.00
FrameSizeAvgI	53923.85	39325.26	1.60
FrameSizeAvgP	12309.49	10483.62	1.87
FrameSizeAvgB	2495.74	0	0.00
FrameSizeMaxI	57448.33	60571.44	2.32
FrameSizeMaxP	29010.22	18900.44	1.43
FrameSizeMaxB	9381.66	0	0.00
FrameSizeMinI	49995.44	29993.11	1.32
FrameSizeMinP	9381.66	0	0.00
FrameSizeMinB	116.33	0	0.00
BitRateAvg	985.34	2051.4	4.58
BitRateAvgFPS30	1881.22	2563.76	3.00
BitRateIn1S	6232.33	2545.21	0.90
BitRateIn2S	3454.51	2261.9	1.44
BitRateIn3S	2178.99	2147.69	2.17
BitRateIn4S	1655.83	2120.91	2.82
BitRateIn5S	1321.23	2109.04	3.51
BitRateIn6S	1106.06	2093.01	4.16
FramePSNRAvg	40.23	36.33	0.90
FramePSNRI	42.28	38.66	0.91
FramePSNRP	40.2	36.29	0.90
FramePSNRB	40.18	0	0.00
FramePSNRMaxI	42.95	42.75	1.00
FramePSNRMaxP	47.65	39.24	0.82
FramePSNRMaxB	47.02	0	0.00
FramePSNRMinI	41.58	36.45	0.88
FramePSNRMinP	34.25	33.15	0.97
FramePSNRMinB	35.1	0	0.00
FrameQPAvg	23.86	26.71	1.12
FrameQPI	20.85	24.32	1.17
FrameQPP	23.07	26.75	1.16

FrameQPB	24.78	0	0.00
FrameQPMaxI	21.66	26.66	1.23
FrameQPMaxP	26.88	30.77	1.14
FrameQPMaxB	30	0	0.00
FrameQPMinI	20.11	19.88	0.99
FrameQPMinP	20.66	24	1.16
FrameQPMinB	18.55	0	0.00

3.2. Test mp4 info

	Test mp4 for Douyin	Test MP4 for Muse
01	Android-MX6-GalaxyJ7-APPS-01-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-01-MX6-Muse.mp4
02	Android-MX6-GalaxyJ7-APPS-02-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-02-Galaxy-Muse.mp4
03	Android-MX6-GalaxyJ7-APPS-03-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-03-Galaxy-Muse.mp4
04	Android-MX6-GalaxyJ7-APPS-04-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-04-Galaxy-Muse.mp4
05	Android-MX6-GalaxyJ7-APPS-05-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-05-Galaxy-Muse.mp4
06	Android-MX6-GalaxyJ7-APPS-06-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-06-MX6-Muse.mp4
07	Android-MX6-GalaxyJ7-APPS-07-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-07-Galaxy-Muse.mp4
08	Android-MX6-GalaxyJ7-APPS-08-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-08-MX6-Muse.mp4
09	Android-MX6-GalaxyJ7-APPS-09-Douyin.mp4	Android-MX6-GalaxyJ7-APPS-09-Galaxy-Muse.mp4

3.3. Basic info

DoiyinMP4		Basic info						
	Filesize(MB)	profile	level	EncM	Resol	FrRate	Dura	PSNR
01	2.42	High	3.1	CABAC	540 x 960	21.7272	00:00:14:636	39.92
02	1.57	High	3.1	CABAC	540 x 960	16.1023	00:00:10:309	38.1
03	1.37	High	3.1	CABAC	540 x 960	13.1929	00:00:10:384	36.81
04	1.43	High	3.1	CABAC	540 x 960	10.8983	00:00:10:093	38.97
05	0.84	High	3.1	CABAC	540 x 960	13.0554	00:00:09:651	43.43
06	0.62	High	3.1	CABAC	540 x 960	22.2905	00:00:06:594	43.07
07	1.28	High	3.1	CABAC	540 x 960	22.0383	00:00:11:888	42.97
08	2.06	High	3.1	CABAC	540 x 960	21.2508	00:00:10:870	38.26
09	1.32	High	3.1	CABAC	540 x 960	11.7927	00:00:08:479	40.69
10								

Muse MP4		Basic info						
	Filesize(MB)	profile	level	EncM	Resol	FrRate	Dura	PSNR
01	4.94	Baseline	4	CAVLC	368 x 640	24	00:00:19:125	36.94
02	2.84	Baseline	4	CAVLC	368 x 640	24	00:00:10:375	38.27
03	3.64	Baseline	4	CAVLC	368 x 640	24	00:00:13:625	33.25
04	3.52	Baseline	4	CAVLC	368 x 640	24	00:00:13:125	33.05
05	2.02	Baseline	4	CAVLC	368 x 640	24	00:00:12:916	42.15
06	1.99	Baseline	4	CAVLC	368 x 640	24	00:00:09:250	40.25
07	3.81	Baseline	4	CAVLC	368 x 640	24	00:00:15:833	40.53
08	6.16	Baseline	4	CAVLC	368 x 640	24	00:00:14:458	29.46
09	3.78	Baseline	4	CAVLC	368 x 640	24	00:00:13:625	33.19
10								

3.4. IPPP structure

Douyin: IBBBPBBBP...

Muse: IPPPPPPPP...

Frame Num

Doiyin MP4	FrameNum				FrameRatio(%)		
	All	I	P	B	I	P	B
01	318	2	201	115	0.62	63.2	36.16
02	166	2	94	70	1.2	56.62	42.16
03	137	1	65	71	0.72	47.44	51.82
04	110	3	46	61	2.72	41.81	55.45
05	126	2	74	50	1.58	58.73	39.68
06	147	1	102	44	0.68	69.38	29.93
07	262	2	125	135	0.76	47.7	51.52
08	231	1	95	135	0.43	41.12	58.44
09	100	2	48	50	2	48	50
10							

Muse MP4	FrmNum				FrmNumRatio(%)		
	All	I	P	B	I	P	B
01	459	7	452	0	1.52	98.47	0
02	249	4	245	0	1.6	98.39	0
03	327	5	322	0	1.52	98.47	0
04	315	5	310	0	1.58	98.41	0
05	310	5	305	0	1.61	98.38	0
06	222	4	218	0	1.8	98.19	0
07	380	6	374	0	1.57	98.42	0
08	347	5	342	0	1.44	98.55	0
09	327	5	322	0	1.52	98.47	0
10							

3.5 Frame size

Frame size and ratio

Doiyin MP4	FrmSize (Byte)				FrmSize Ratio(%)		
	All	I	P	B	I	P	B
01	2296295	71579	1945901	278815	3.11	84.74	12.14
02	1478317	114525	1180596	183196	7.74	79.86	12.39
03	1266596	70818	1039214	156564	5.59	82.04	12.36
04	1330068	263903	849169	216996	19.84	63.84	16.31
05	717656	51475	554281	111900	7.17	77.23	15.59
06	539748	11833	450726	77189	2.19	83.5	14.3
07	1134871	57200	813996	263675	5.04	71.72	23.23
08	1976279	84492	1603985	287802	4.27	81.16	14.56
09	1246644	165629	901995	179020	13.28	72.35	14.36
10							

Muse MP4	FrmSize (Byte)				FrmSize Ratio(%)		
	All	I	P	B	I	P	B
01	4970019	313241	4656778	0	6.3	93.69	0
02	2738784	176793	2561991	0	6.45	93.54	0
03	3597143	192088	3405055	0	5.34	94.65	0
04	3479429	217169	3262260	0	6.24	93.75	0
05	1905830	126129	1779701	0	6.61	93.38	0
06	1949732	128728	1821004	0	6.6	93.39	0
07	3761965	218358	3543607	0	5.8	94.19	0
08	6336810	255044	6081766	0	4.02	95.97	0
09	3749288	191597	3557691	0	5.11	94.88	0
10							

Frame size and compressed ratio

Doiyin MP4	Compressed Ratio				AvgSize (Byte)			
	Avg	I	P	B	Avg	I	P	B
01	107.68	21.72	80.32	320.72	7221.05	35789.5	9681.09	2424.47
02	87.31	13.57	61.91	297.12	8905.52	57262.5	12559.53	2617.08
03	84.1	10.98	48.63	352.63	9245.22	70818	15987.9	2205.12
04	64.3	8.83	42.12	218.59	12091.52	87967.66	18460.19	3557.31
05	136.52	30.21	103.81	347.45	5695.68	25737.5	7490.28	2238
06	211.77	65.71	175.97	443.25	3671.75	11833	4418.88	1754.29
07	179.51	27.18	119.41	398.12	4331.56	28600	6511.96	1953.14
08	90.89	9.2	46.05	364.75	8555.32	84492	16884.05	2131.86
09	62.37	9.38	41.38	217.18	12466.44	82814.5	18791.56	3580.4
10								

Muse MP4	Compressed Ratio				AvgSize (Byte)			
	Avg	I	P	B	Avg	I	P	B
01	32.62	7.89	34.29	0	10827.92	44748.71	10302.6	0
02	32.11	7.99	33.78	0	10999.13	44198.25	10457.1	0
03	32.11	9.19	33.4	0	11000.43	38417.6	10574.7	0
04	31.98	8.13	33.57	0	11045.8	43433.8	10523.41	0
05	57.46	14	60.54	0	6147.83	25225.8	5835.08	0
06	40.22	10.97	42.29	0	8782.57	32182	8353.22	0
07	35.68	9.7	37.28	0	9899.9	36393	9474.88	0
08	19.34	6.92	19.86	0	18261.7	51008.8	17782.94	0
09	30.81	9.21	31.97	0	11465.71	38319.4	11048.72	0
10								

Max/Min frame size

Doiyin MP4	MaxSize (Byte)			MinSize (Byte)		
	I	P	B	I	P	B
01	39208	25537	7846	32371	4610	29
02	57863	33642	9967	56662	93	26
03	70818	36456	10183	70818	5754	67
04	95515	49066	13719	76785	4057	48
05	28748	16143	8794	22727	2912	127
06	11833	8249	3859	11833	2412	414
07	30415	11414	4462	26785	1606	193
08	84492	24871	6967	84492	6309	121
09	98143	55714	18638	67486	76	22
10						

Muse MP4	MaxSize (Byte)			MinSize (Byte)		
	I	P	B	I	P	B
01	66803	21399	0	32019	2654	0
02	57383	19525	0	35208	2925	0
03	66020	21721	0	26563	4643	0
04	75438	21010	0	31354	2685	0
05	27335	10143	0	20551	1418	0
06	36060	15445	0	29129	5569	0
07	44241	15540	0	31923	3501	0
08	104643	24225	0	35137	6938	0
09	67220	21096	0	28054	4184	0
10						

3.6. Bitrate

Bitrate

Douyin MP4	Bitrate (kbps)							
	avg	avgfps30	1s	2s	3s	4s	5s	6s
01	1226.23	1692.43	14891.19	8023.44	5823.32	2241.33	1244.05	1269.98
02	1121.29	2088.49	8493.24	3896.56	2110.16	2562.63	1546.11	1434.41
03	953.3	2170.01	3830.86	1589.21	1371.89	1699.03	1959.52	1160.13
04	1029.84	2839.11	10359.46	1763.01	1499.63	1429.89	1143.91	1105.42
05	581	1334.92	710.77	1591.28	1780.97	1205.57	732.14	610.11
06	639.87	860.56	3814.77	1598.55	881.4	661.05	774.21	645.17
07	746.31	1015.59	970.5	3655.16	1953.48	954.55	908.74	881.29
08	1420.39	2005.15	10052.01	7166.72	1456.94	2847.96	1746.42	1699.02
09	1149.87	2924.74	2968.21	1806.69	2733.16	1300.52	1836.02	1149.05
10								

Muse MP4	Bitrate (kbps)							
	avg	avgfps30	1s	2s	3s	4s	5s	6s
01	2030.76	2537.79	2582.41	2400.33	2296.6	2195.6	2158.56	2110.46
02	2063.33	2577.92	2118.82	1938.14	1935.03	1993.98	2005.47	2052.43
03	2063.33	2578.22	2983.28	2485.55	2312.65	2235.06	2231.24	2156.75
04	2071.87	2588.86	3008.85	2480.8	2333.47	2247.49	2188.29	2159.75
05	1153.31	1441.36	848.05	977.94	991.78	1075.03	1114.64	1105.15
06	1646.73	2058.41	1721.08	1638.23	1526.01	1578.01	1632.7	1626.01
07	1856.62	2321.51	2403.15	2101.3	2051.81	1951.16	1910.28	1846.92
08	3426.04	4282.55	4154.16	3704.71	3592.88	3569.48	3460.35	3473.14
09	2150.61	2687.27	3087.12	2630.13	2289	2242.38	2279.88	2306.55
10								

3.7. Frame PSNR

Frame PSNR

Douyin MP4	Frame PSNR(db)									
	Avg	I	P	B	MaxI	MaxP	MaxB	MinI	MinP	MinB
01	39.91	42.22	39.97	39.77	43.42	42.36	42.26	41.02	35.23	35.96
02	38.09	42.63	38.24	37.76	43.79	43.01	47.5	41.47	29.9	29.93
03	36.8	40.73	36.69	36.84	40.73	40.43	41.08	40.73	33.4	32.79
04	38.97	41.02	38.74	39.04	41.45	47.27	50.36	40.28	36.15	35.77
05	43.42	44.85	43.67	43.01	45.64	55.3	44.95	44.06	35.94	40.48
06	43.06	43.9	42.99	43.2	43.9	48.14	44.98	43.9	40.72	40.96
07	42.96	43.6	42.92	43	44.86	51.84	53.29	42.35	39.49	40
08	38.26	39.68	37.86	38.52	39.68	45.27	42.48	39.68	26.04	29
09	40.68	41.92	40.78	40.54	43.08	55.3	56.3	40.77	31.46	31.09
10										

Muse MP4	Frame PSNR(db)									
	Avg	I	P	B	MaxI	MaxP	MaxB	MinI	MinP	MinB
01	36.93	38.89	36.9	0	42.35	41.03	0	36.44	31.75	0
02	38.26	41.44	38.21	0	42.49	40.82	0	39.59	33.46	0
03	33.24	35.93	33.2	0	42.09	36.94	0	32.15	30.5	0
04	33.04	35.26	33.01	0	42.04	36.81	0	32.03	30.66	0
05	42.14	44.74	42.1	0	44.99	44.36	0	44.51	40.07	0
06	40.24	43.07	40.19	0	43.27	41.38	0	42.86	37.26	0
07	40.52	43.23	40.48	0	43.6	42.14	0	42.77	36.55	0
08	29.45	31.12	29.42	0	41.8	32.82	0	27.68	27.76	0
09	33.18	34.28	33.17	0	42.12	36.89	0	30.02	30.37	0
10										

3.8. Frame QP

Frame QP

DouyinMP4	Frame QP						MaxB	MinI		
	Avg	I	P	B	MaxI	MaxP			MinP	MinB
01	25.17	23	24.11	27.06	24	26	32	22	22	24
02	26.21	20.5	24.12	29.18	22	30	34	19	19	26
03	26.99	22	25.13	28.76	22	28	32	22	23	25
04	24.65	20.66	23.97	25.36	22	27	30	20	22	16
05	20.43	18.5	20.55	20.34	19	23	27	18	19	12
06	22.1	22	22.18	21.93	22	24	24	22	21	17
07	20.14	18.5	20.34	19.97	20	23	22	17	19	14
08	26.38	23	24.34	27.85	23	34	38	23	23	22
09	22.7	19.5	22.89	22.64	21	27	31	18	18	11
10										

Muse MP4	Frame QP						MaxB	MinI		
	Avg	I	P	B	MaxI	MaxP			MinP	MinB
01	26.38	24.14	26.41	0	26	33	0	20	23	0
02	25.2	21.75	25.26	0	24	32	0	20	23	0
03	29.57	26.8	29.61	0	31	33	0	20	25	0
04	29.73	27.4	29.77	0	31	33	0	20	25	0
05	21.94	19.2	21.98	0	20	25	0	19	21	0
06	23.07	20	23.13	0	20	26	0	20	22	0
07	22.71	20	22.76	0	20	27	0	20	22	0
08	32.38	31.2	32.4	0	35	35	0	20	30	0
09	29.46	28.4	29.48	0	33	33	0	20	25	0
10										