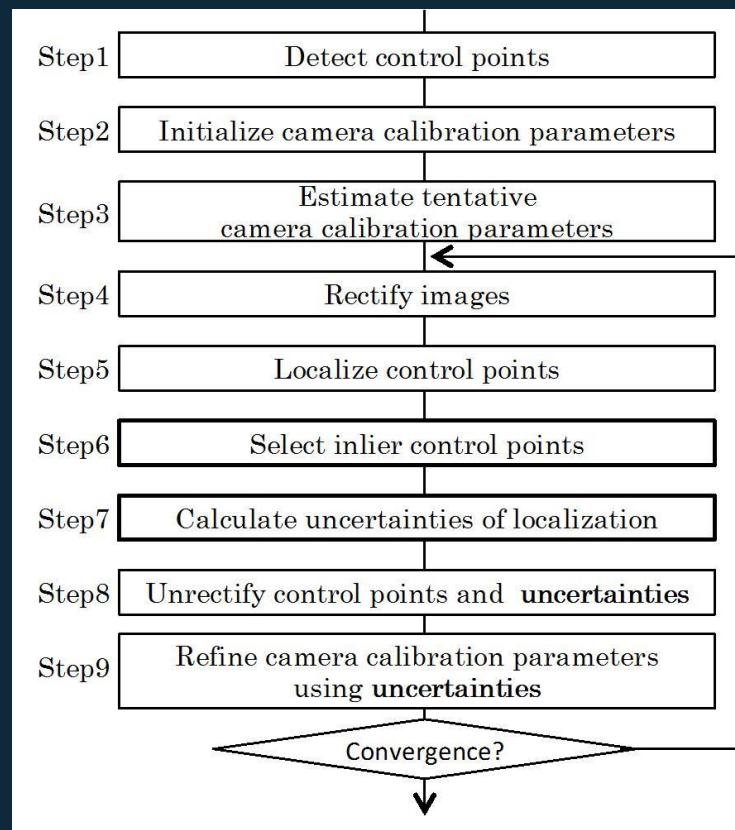


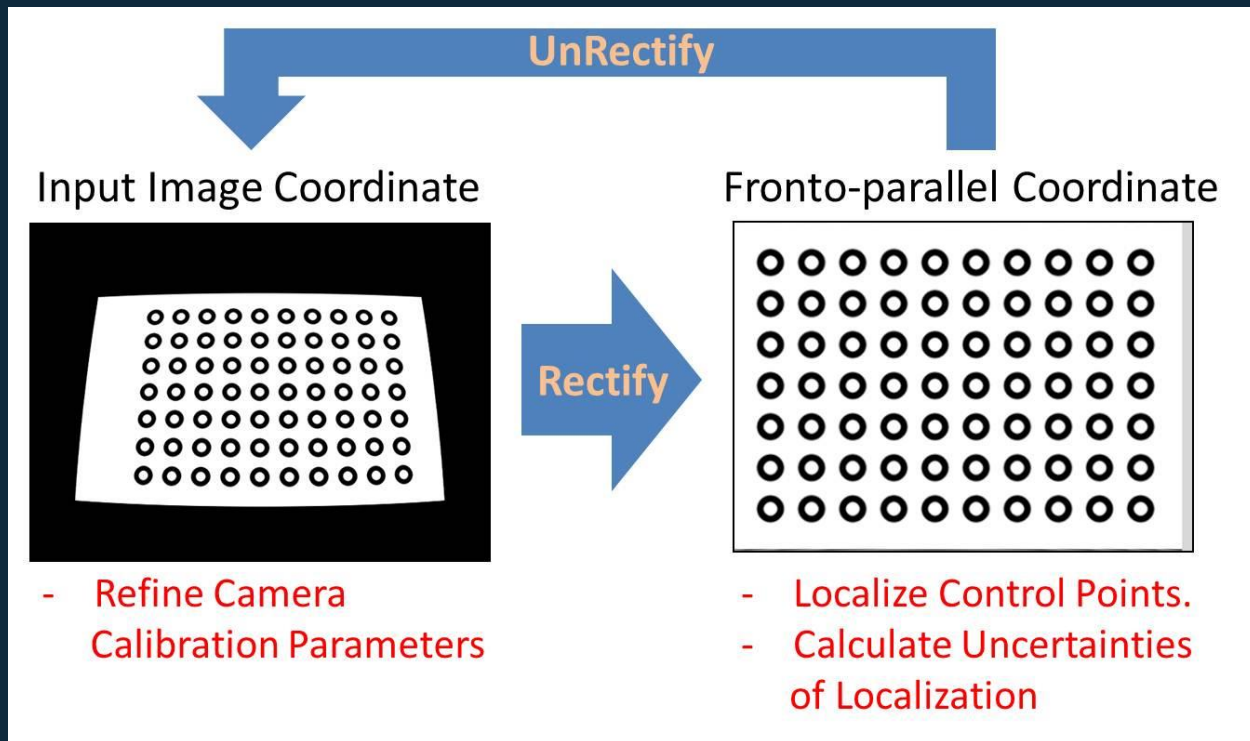
Detection and identification of a pattern for camera calibration based on Ankur method

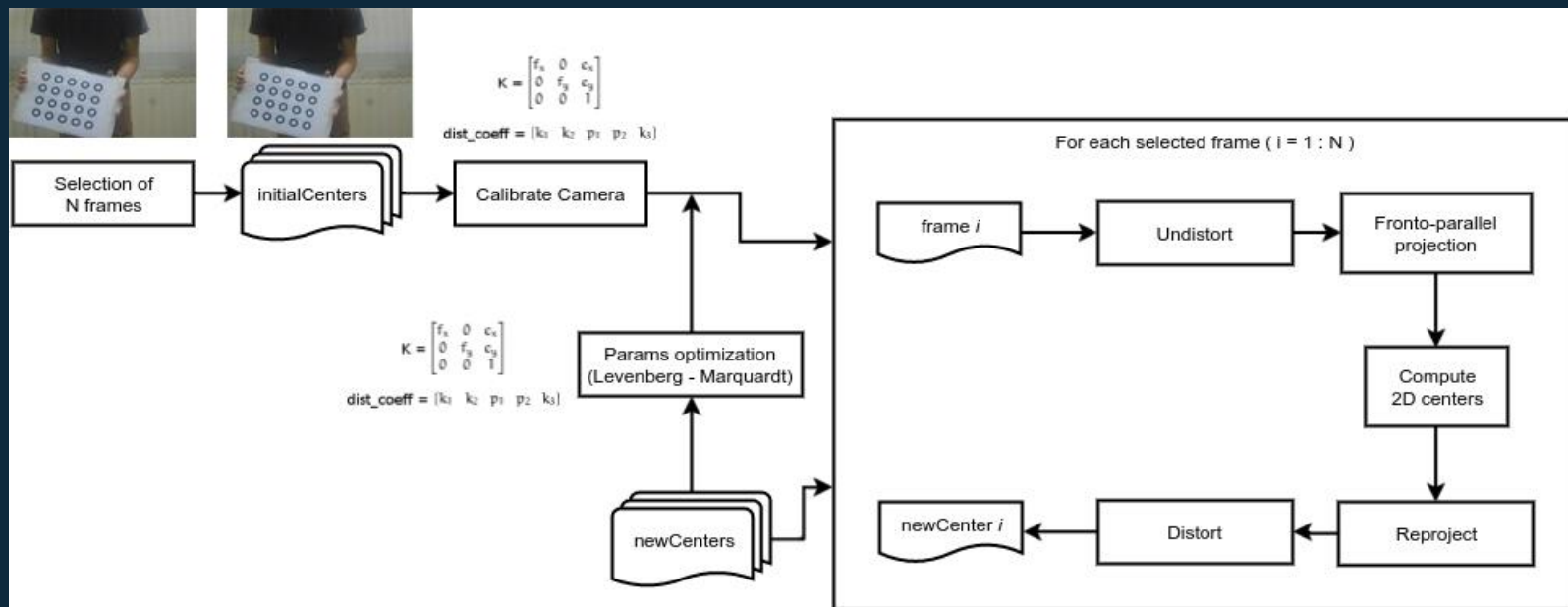
B.S.C.s. Franci Suni Lopez
B.S.C.s. Joel Gallegos Guillen

Ankur Pipeline



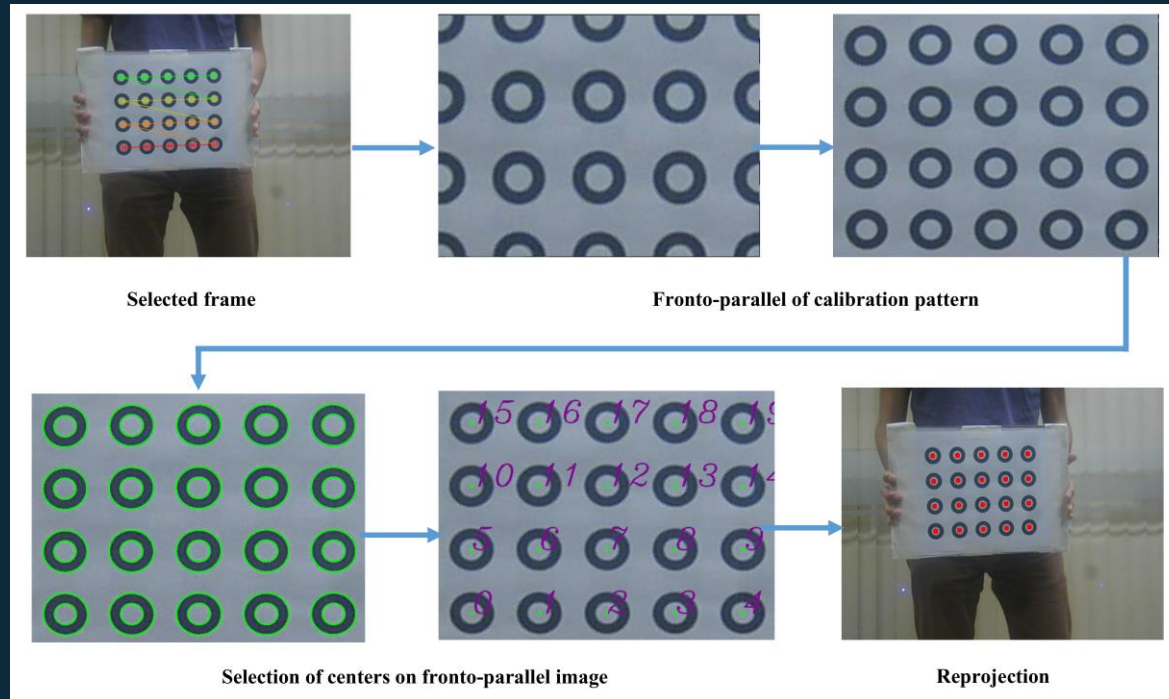
Fronto-parallel projection







Flow






Results Part 1





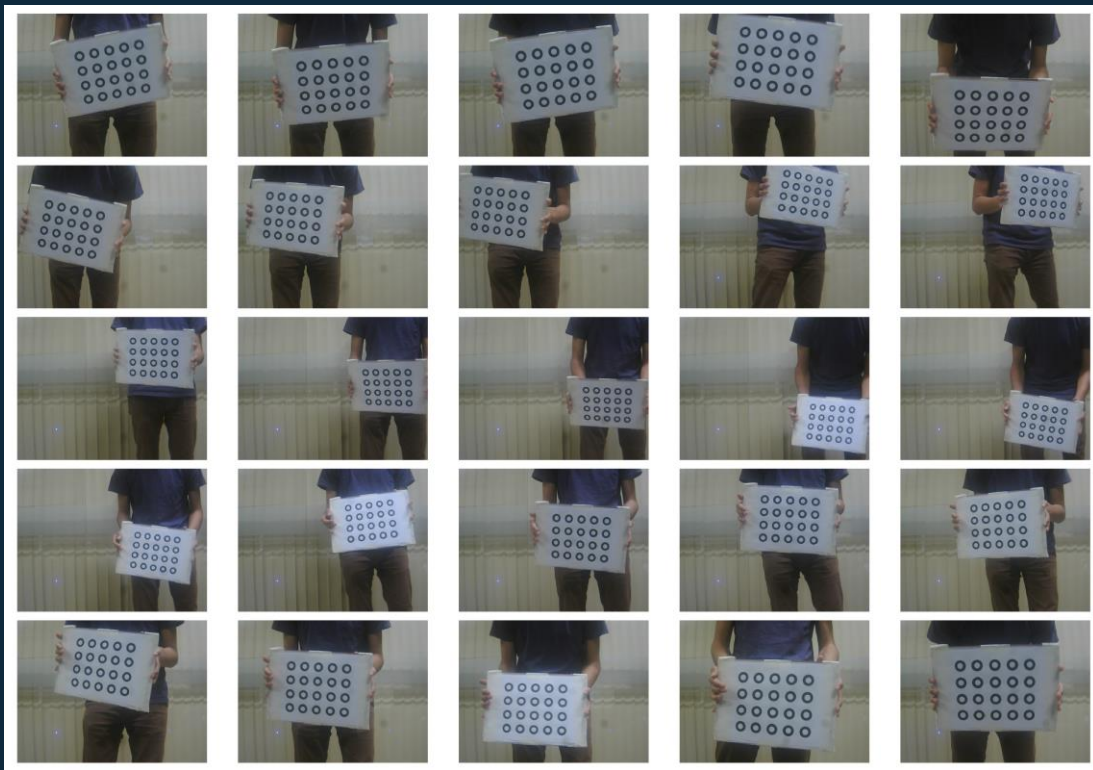
Initial results

Calibration pattern	Life camera					PS3 camera				
	R. error	\bar{f}_x	\bar{f}_y	\bar{c}_x	\bar{c}_y	R. error	\bar{f}_x	\bar{f}_y	\bar{c}_x	\bar{c}_y
Chessboard	0.35204	624.77	624.24	324.33	244.38	0.23562	848.48	847.97	322.21	249.81
Asymmetric circles	0.2208	563.73	567.76	327.83	231.32	0.1695	927.15	931.09	333.47	238.31
Rings	0.19327	588.49	591.84	340.02	234.22	0.15135	820.92	823.95	337.91	241.43





Selected frames



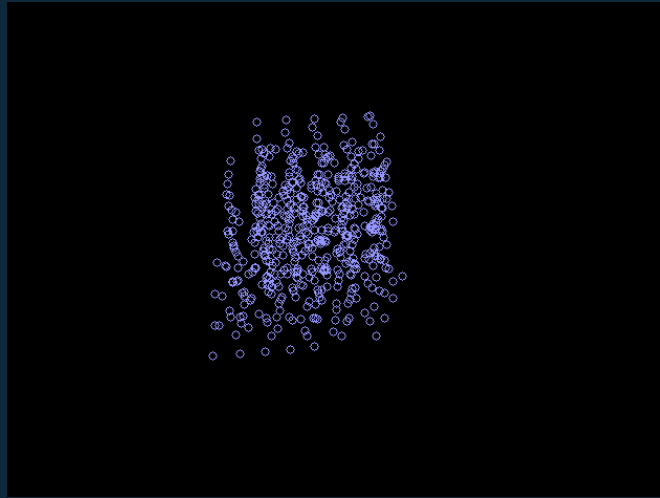
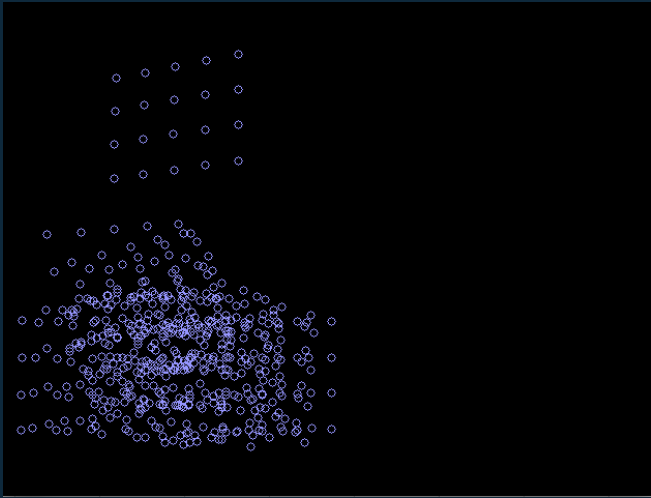


Results Part 2



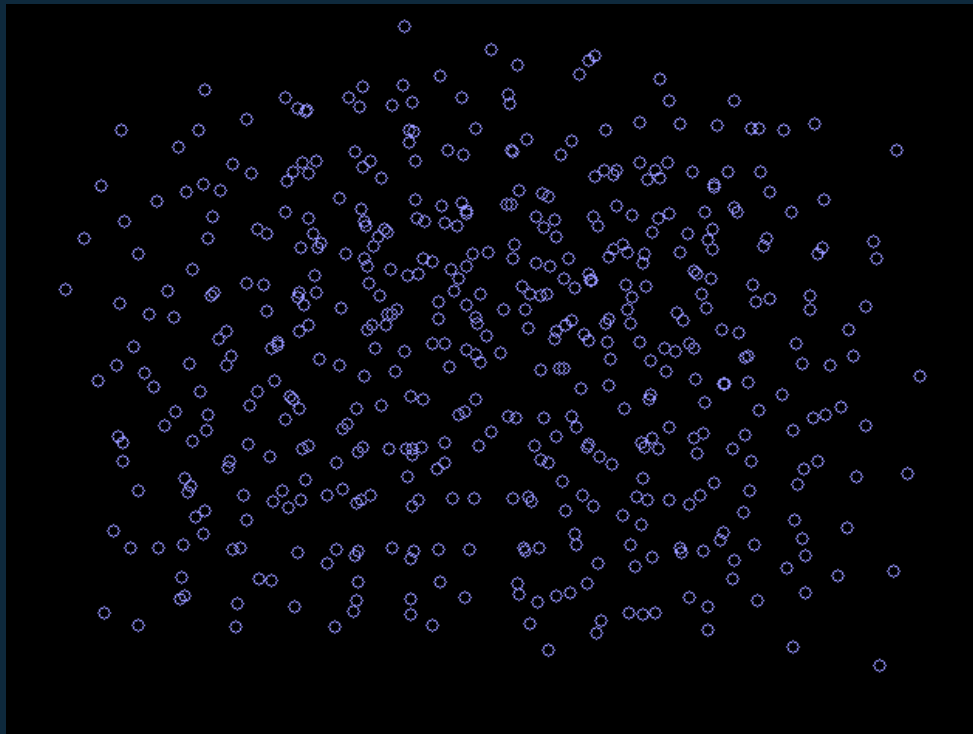


Bad distribution of points



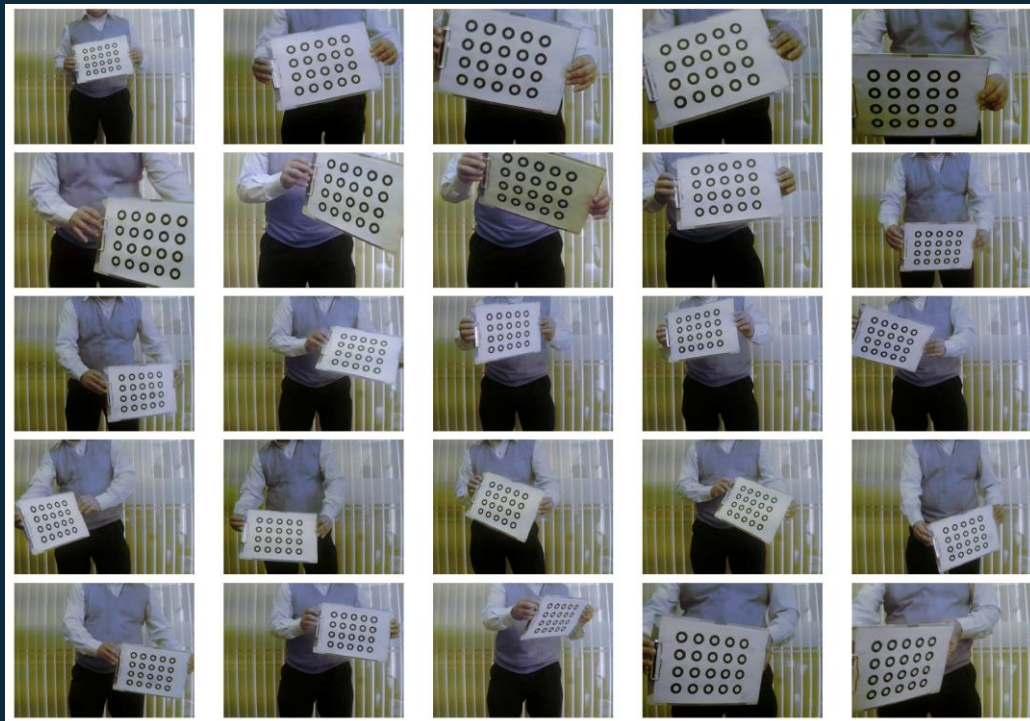


Good distribution of points



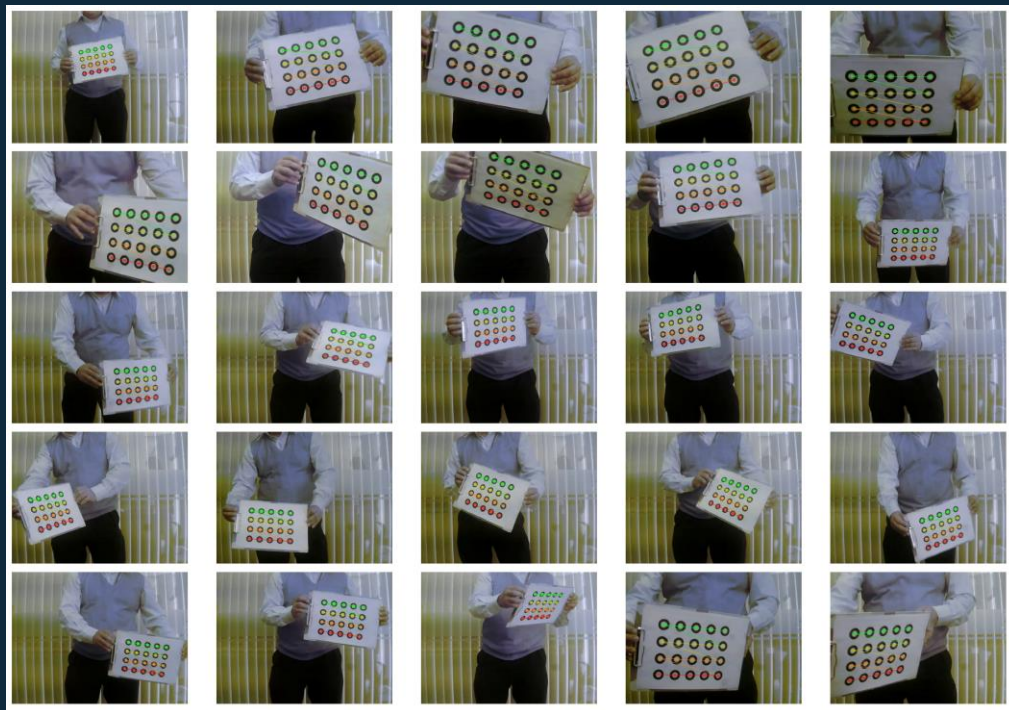


Selected frames





Reprojection of computed centers





Life camera-Rings pattern

Nuner of frames	Life camera-Rings pattern					
	fx	fy	cx	cy	R. error	Col
25	559.794	552.813	326.995	218.718	0.14079	0.000089
30	549.744	543.572	331.376	219.521	0.152673	0.000101834
40	567.745	560.507	334.311	227.778	0.182651	0.000111931
50	577.685	571.781	327.861	228.734	0.207857	0.000106074





25 frames

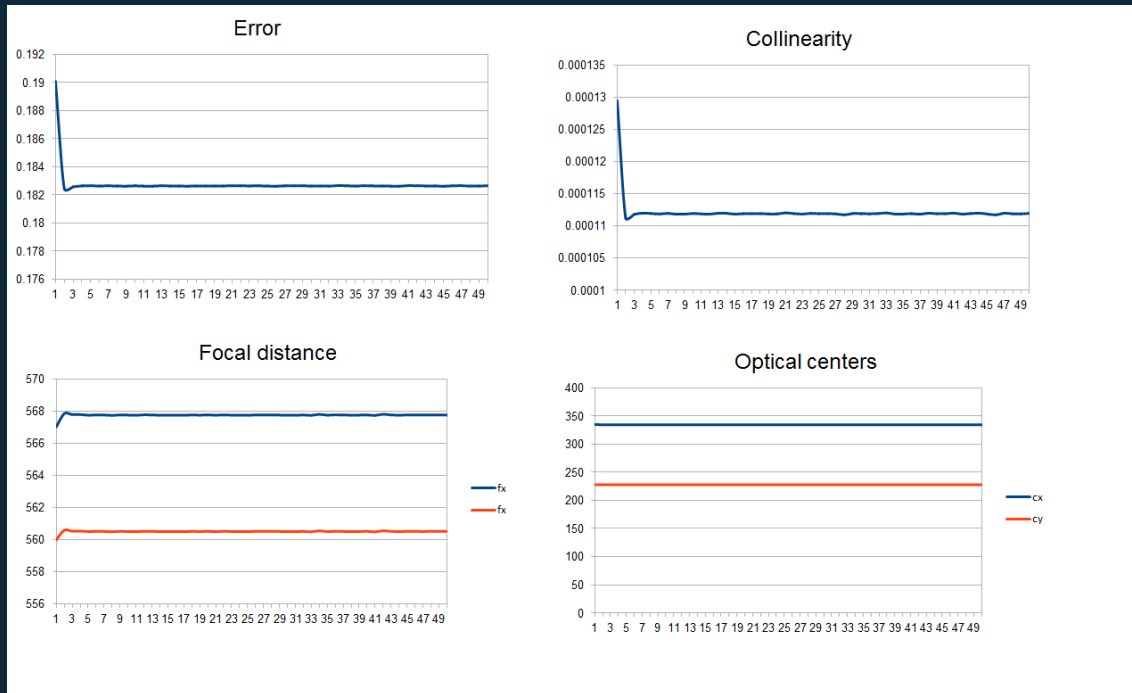




30 frames



40 frames




50 frames





PS3 camera-Rings pattern

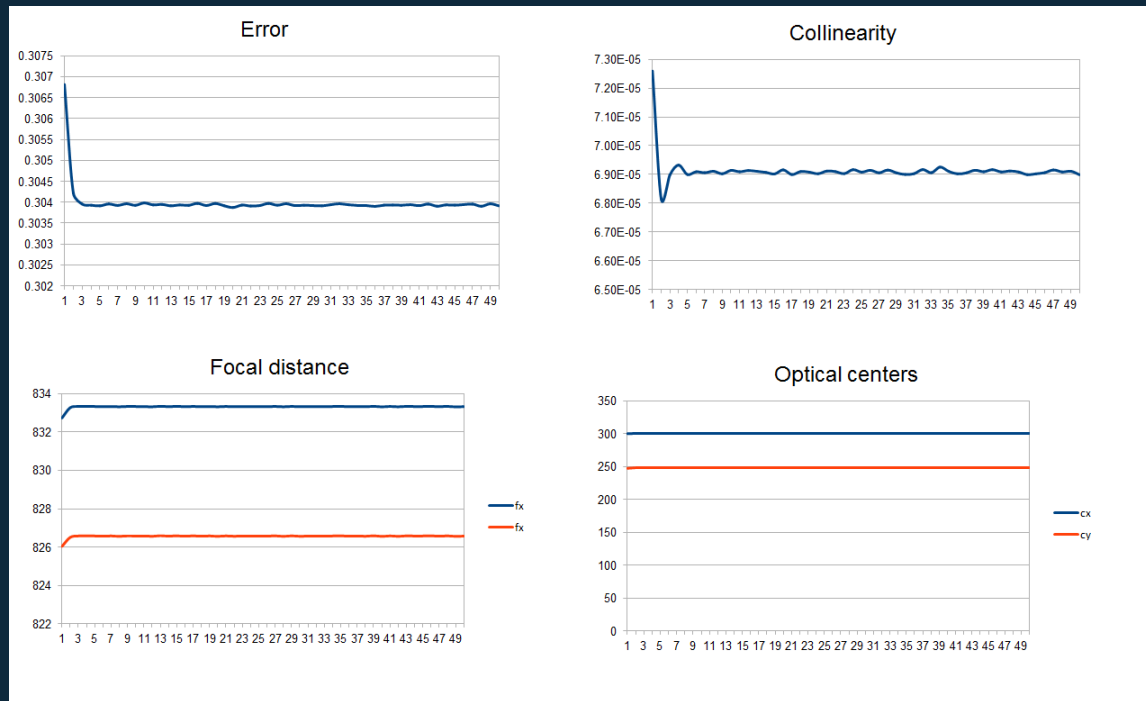
Numer of frames	PS3 camera-Rings pattern					
	fx	fy	cx	cy	R. error	Col
25	835.258	828.331	311.722	245.671	0.281844	0.000065
30	833.331	826.575	300.828	248.625	0.303913	0.00006.9
40	822.559	815.67	302.04	249.15	0.350216	0.00008.55
50	827.881	821.391	299.945	244.493	0.411	0.000123271



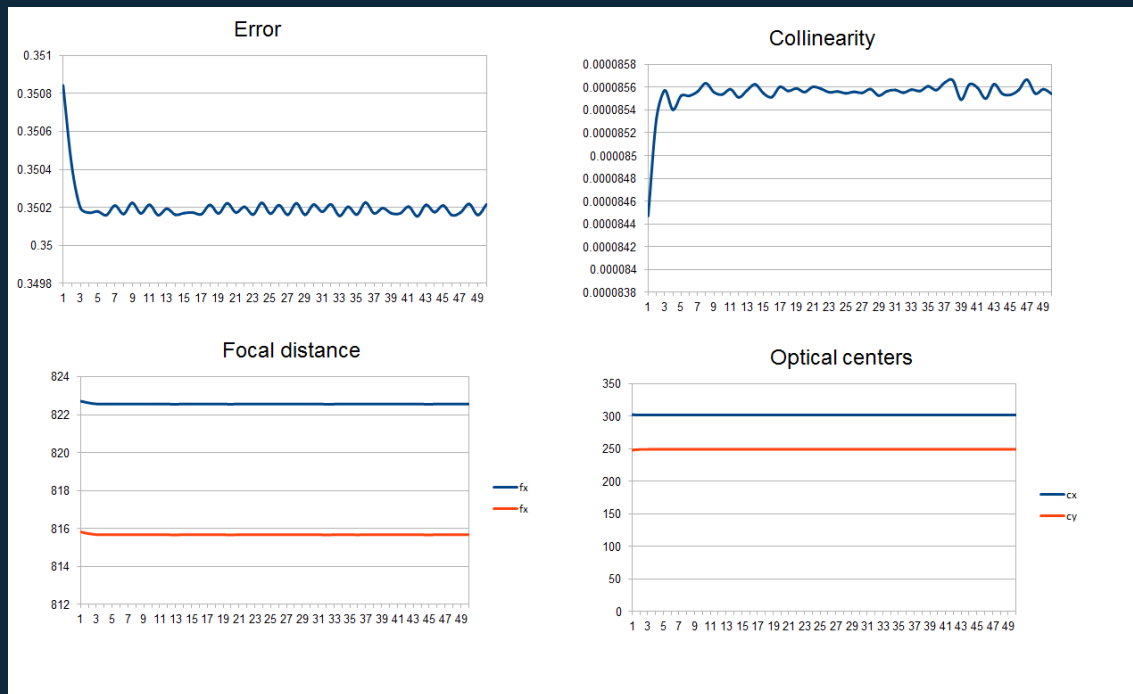
25 frames



30 frames



40 frames



50 frames





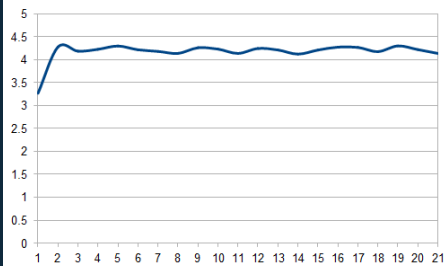
Life camera-Chessboard pattern

Numer of frames	Life camera-Chessboard pattern					
	fx	fy	cx	cy	R. error	Col
25	401.053	407.25	373.806	192.64	4.22128	0.00387705
30	509.817	517.819	349.112	212.217	3.76644	0.00299109
40	588.951	578.237	332.354	236.734	3.23615	0.00187685
50	585.427	579.667	334.313	239.309	2.82979	0.00150241

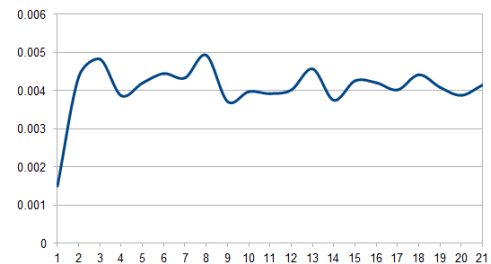


25 frames

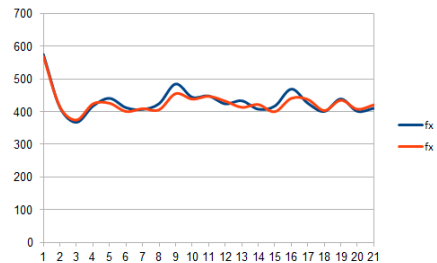
Error



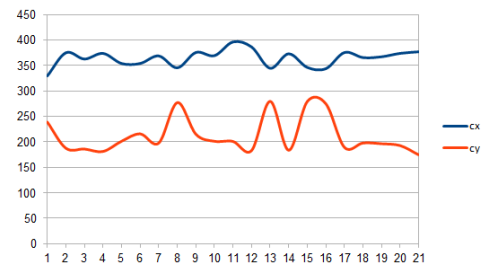
Collinearity



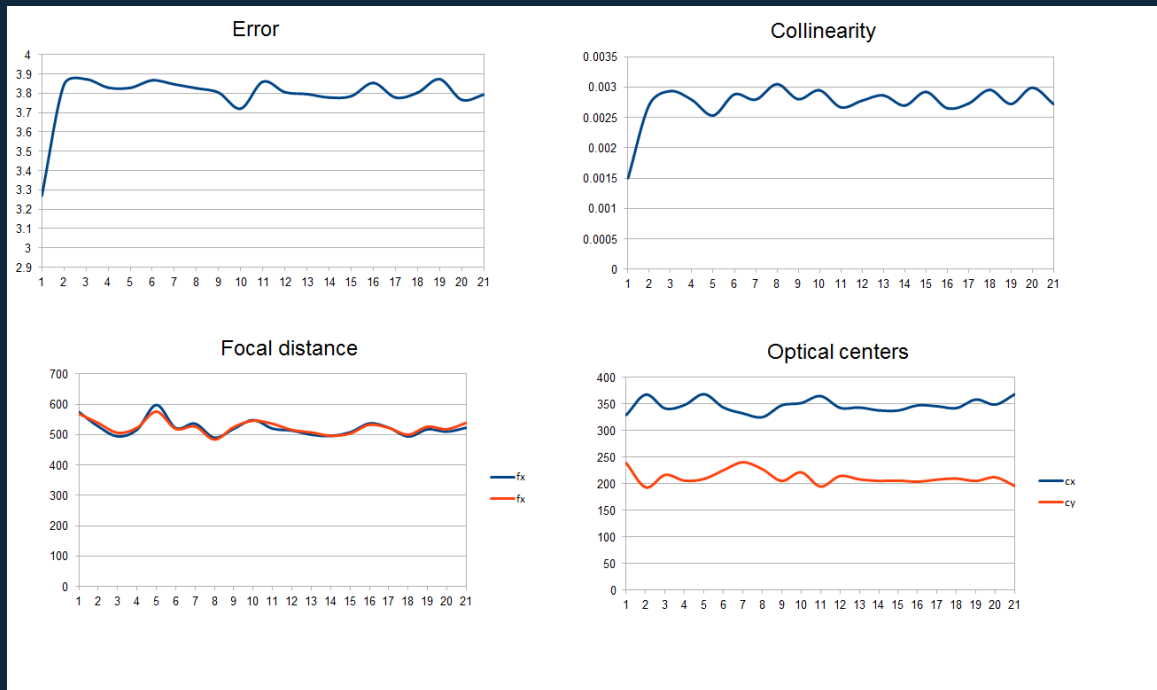
Focal distance



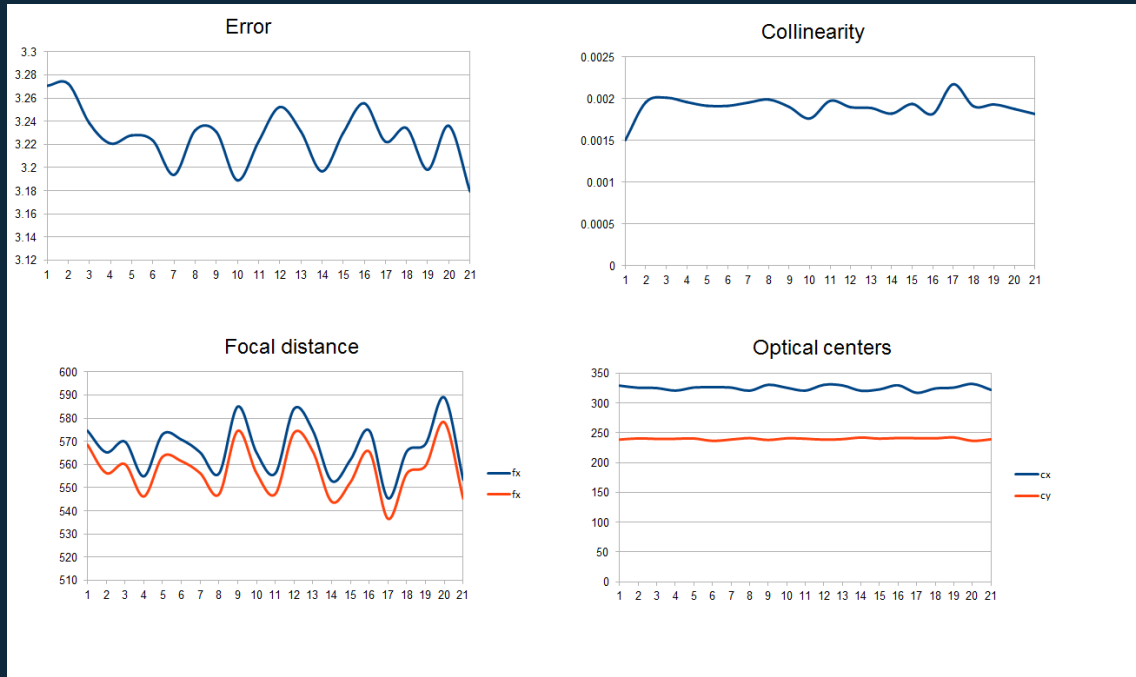
Optical centers



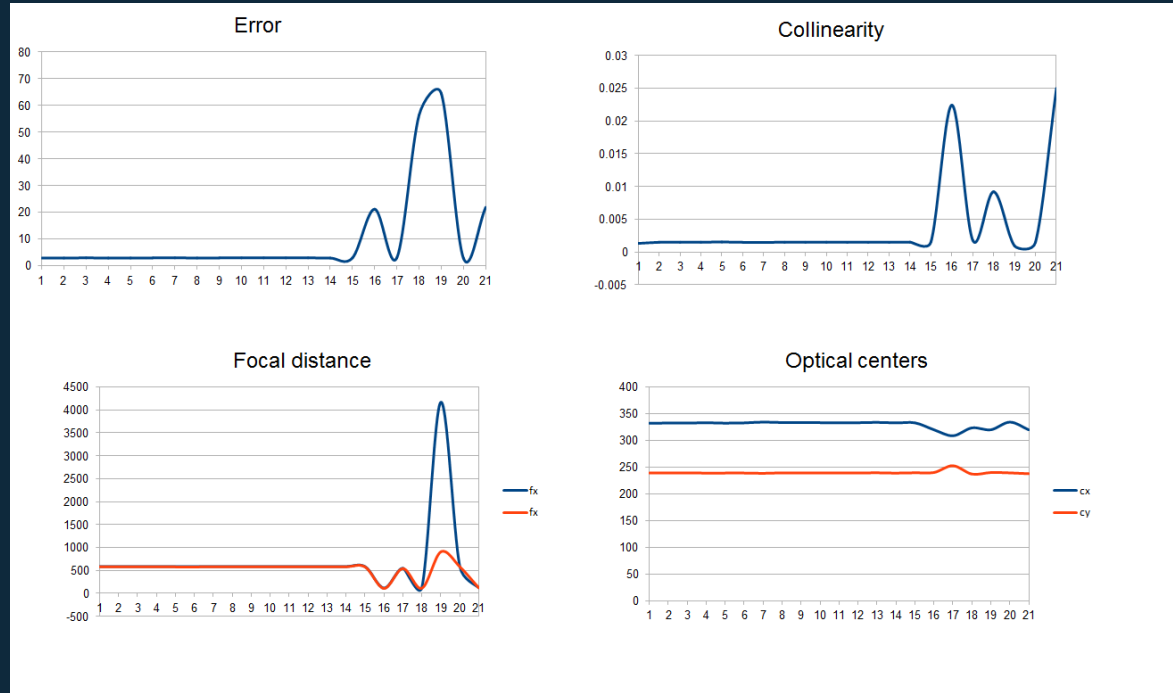
30 frames



40 frames




50 frames





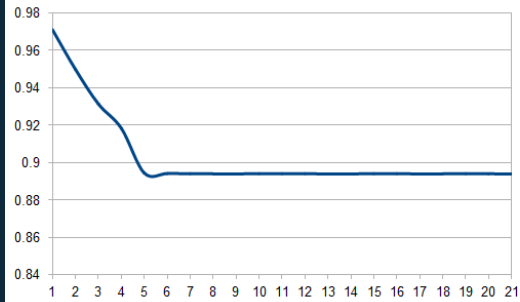
PS3 camera-Chessboard pattern

Numer of frames	PS3 camera-Chessboard pattern					
	fx	fy	cx	cy	R. error	Col
25	791.046	776.881	333.761	298.362	0.893937	0.000151916
30	804.248	791.28	325.62	292.727	0.838611	0.00015405
40	817.088	808.095	313.358	282.489	0.797239	0.000151916
50	812.07	802.006	315.525	255.765	0.772288	0.000134092

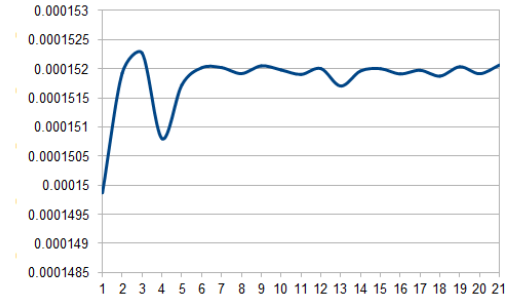


25 frames

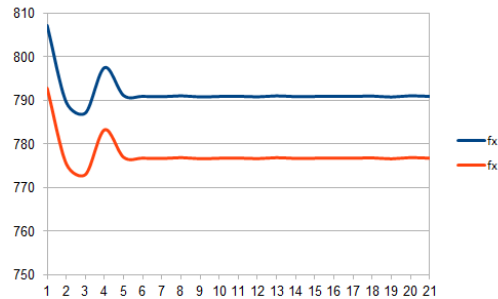
Error



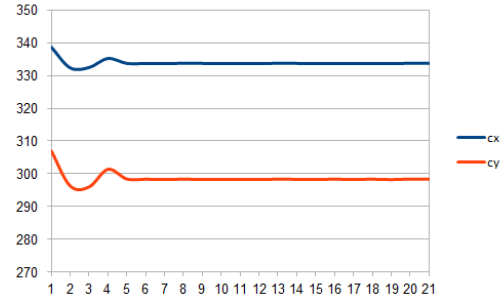
Collinearity



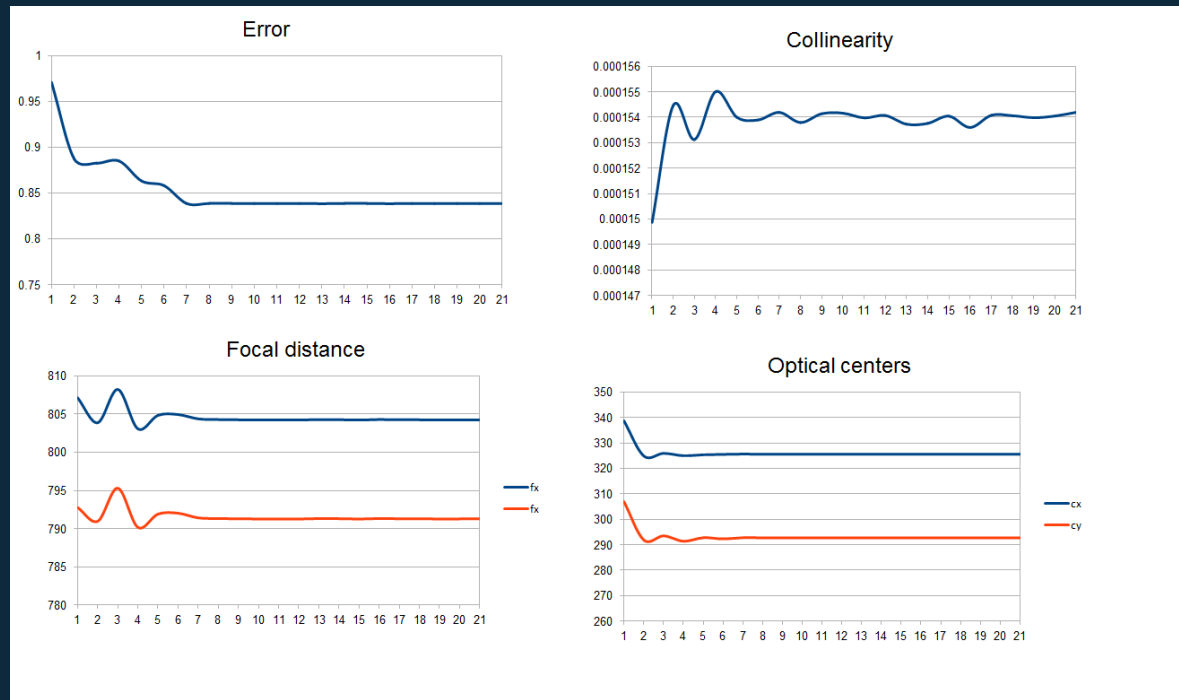
Focal distance



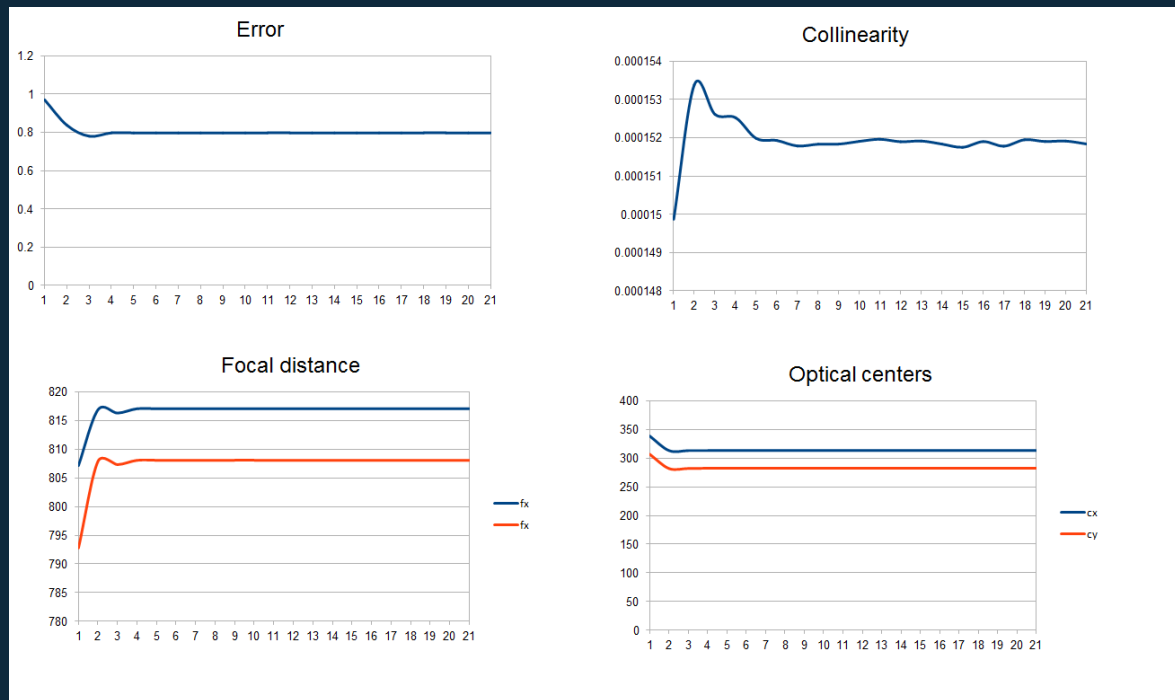
Optical centers



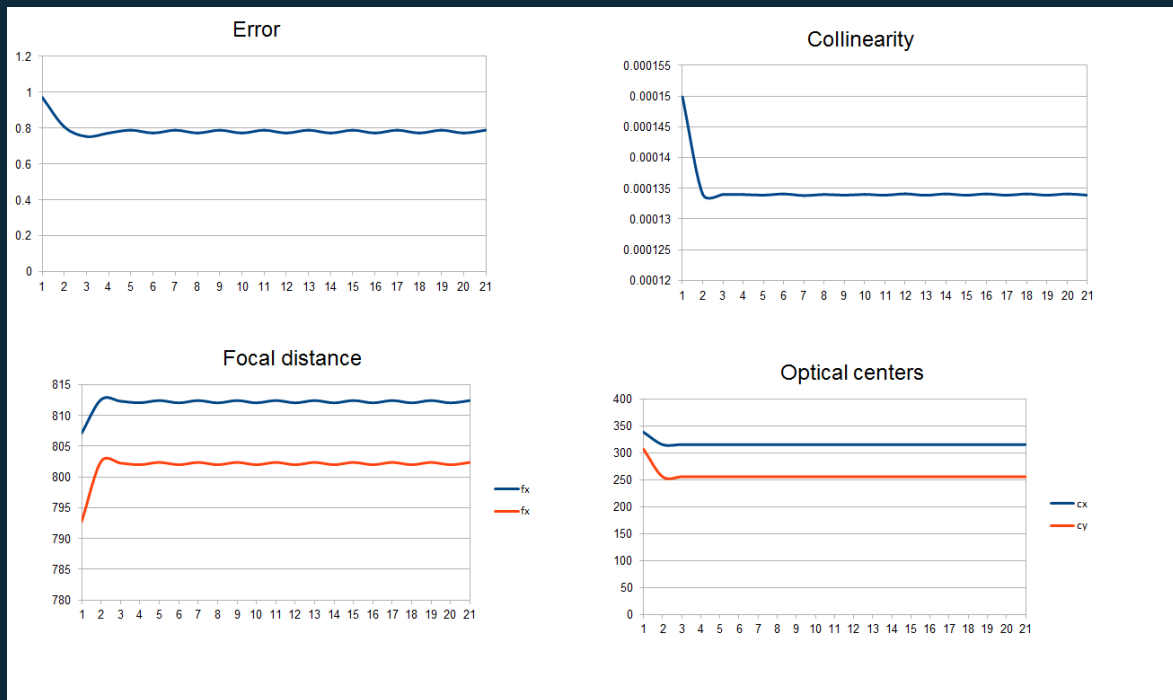
30 frames



40 frames




50 frames





Life camera-Asymmetric pattern

Numer of frames	Life camera-Asymmetric pattern					
	fx	fy	cx	cy	R. error	Col
25	614.156	612.825	332.037	227.527	0.197152	0.070335225
30	611.596	610.001	330.532	227.759	0.201854	0.0756189
40	606.7	605.028	327.581	227.581	0.251959	0.0907024
50	611.122	608.233	332.812	223.02	0.284187	0.0990664

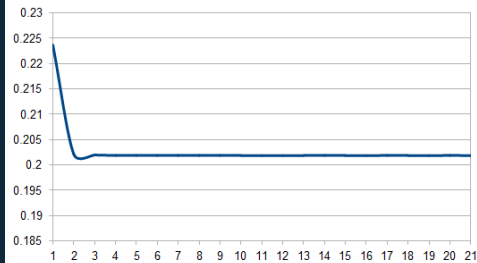


25 frames

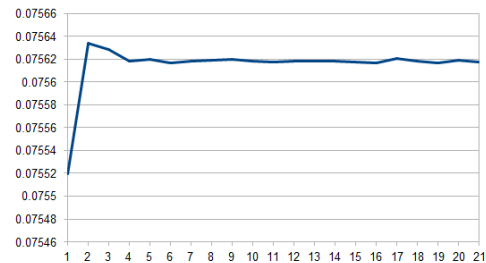


30 frames

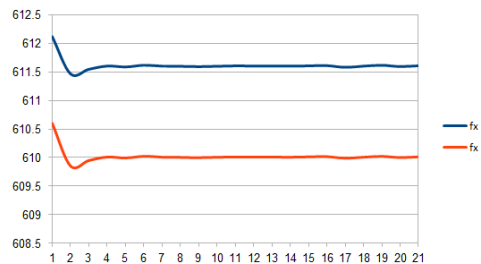
Error



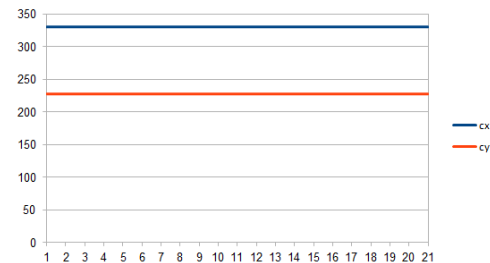
Collinearity



Focal distance

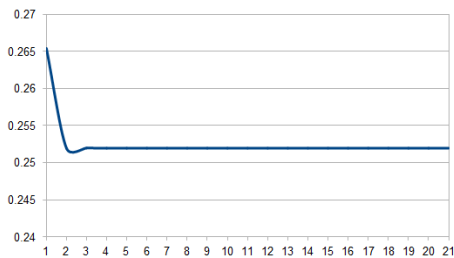


Optical centers

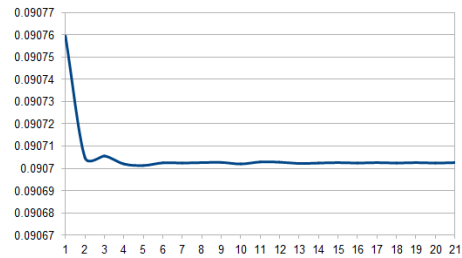


40 frames

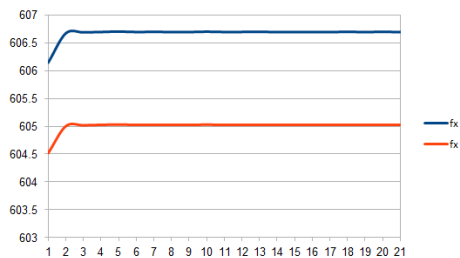
Error



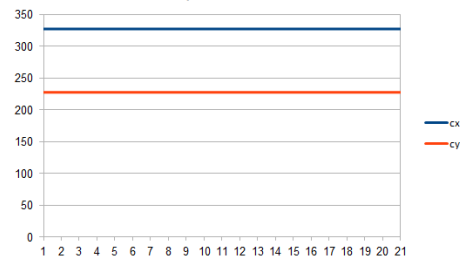
Collinearity



Focal distance

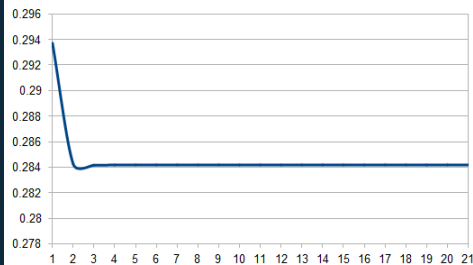


Optical centers

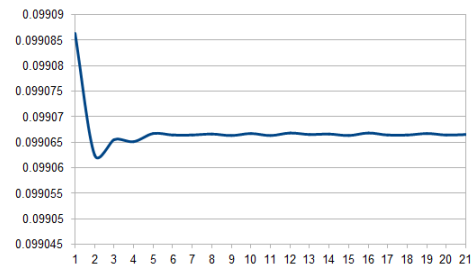


50 frames

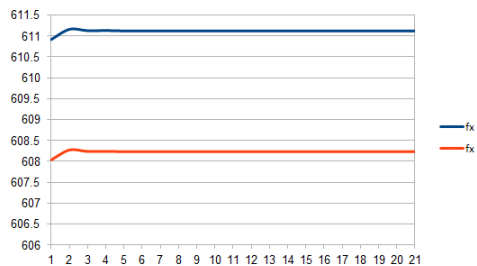
Error



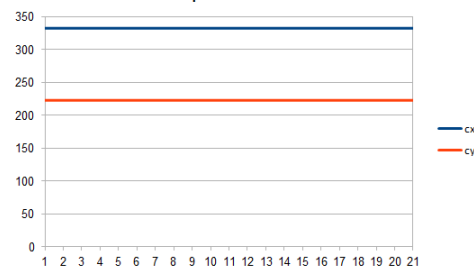
Collinearity



Focal distance




Optical centers



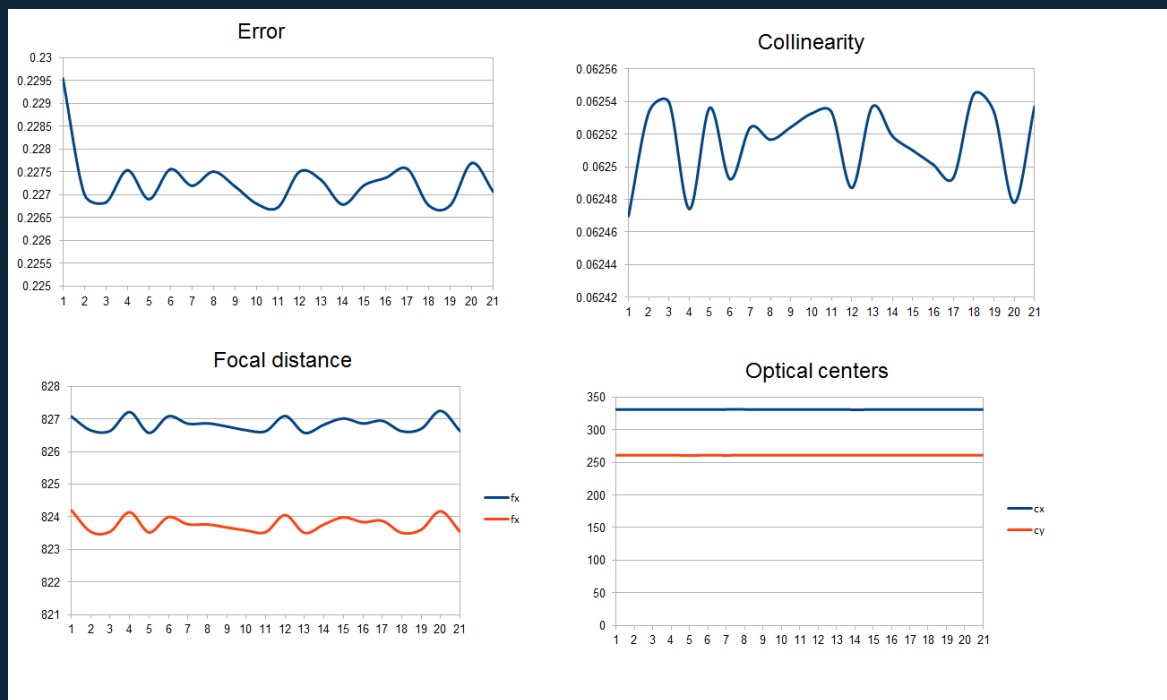


Life camera-Asymmetric pattern

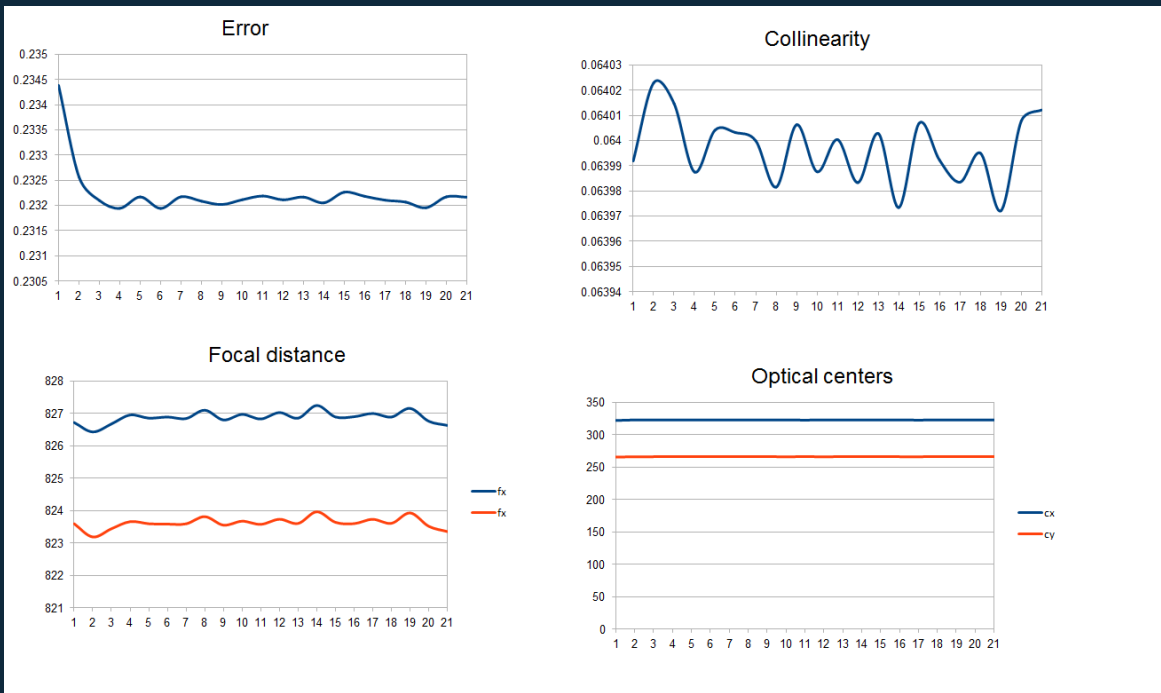
Numer of frames	PS3 camera-Asymmetric pattern					
	fx	fy	cx	cy	R. error	Col
25	827.249	824.173	331.117	261.044	0.227696	0.062478
30	826.765	823.52	323.022	266.383	0.232171	0.0640078
40	837.656	831.34	362.501	248.74	0.267859	0.0671237
50	870.909	862.939	402.742	276.328	0.316867	0.074168



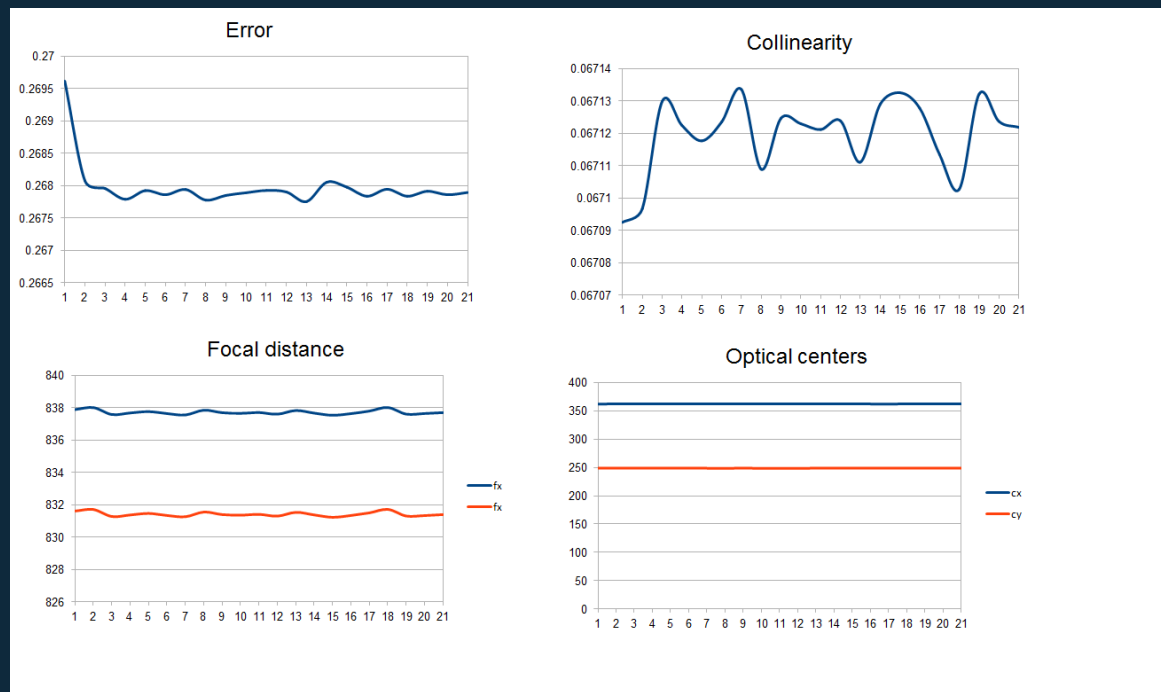
25 frames



30 frames

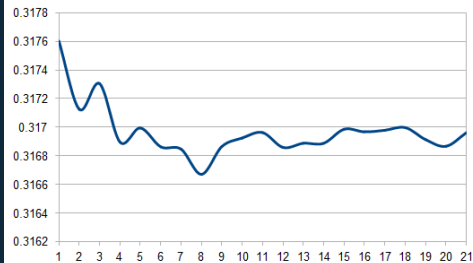


40 frames

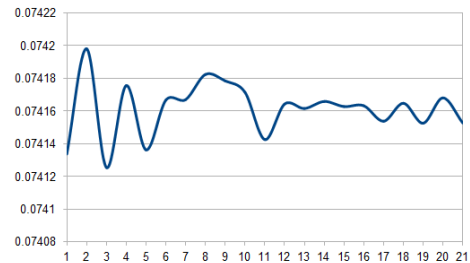


50 frames

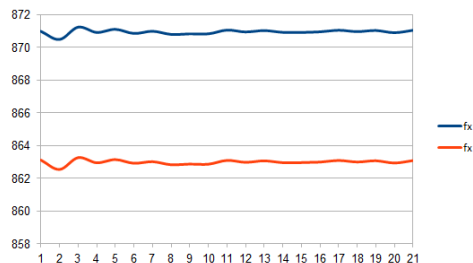
Error



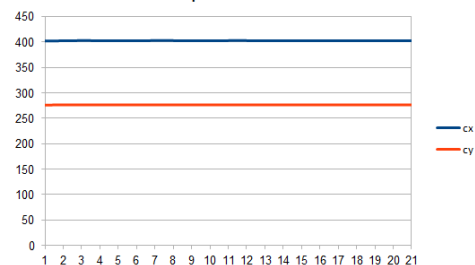
Collinearity



Focal distance



Optical centers





Thanks!
Questions?

