

(Supplementary) Improved Structure from Motion Using Fiducial Marker Matching

Anonymous ECCV submission

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1 Indoor Image Collections with Markers Continued

Example images for all our new unordered image collections are provided in Figures 1 and 2.

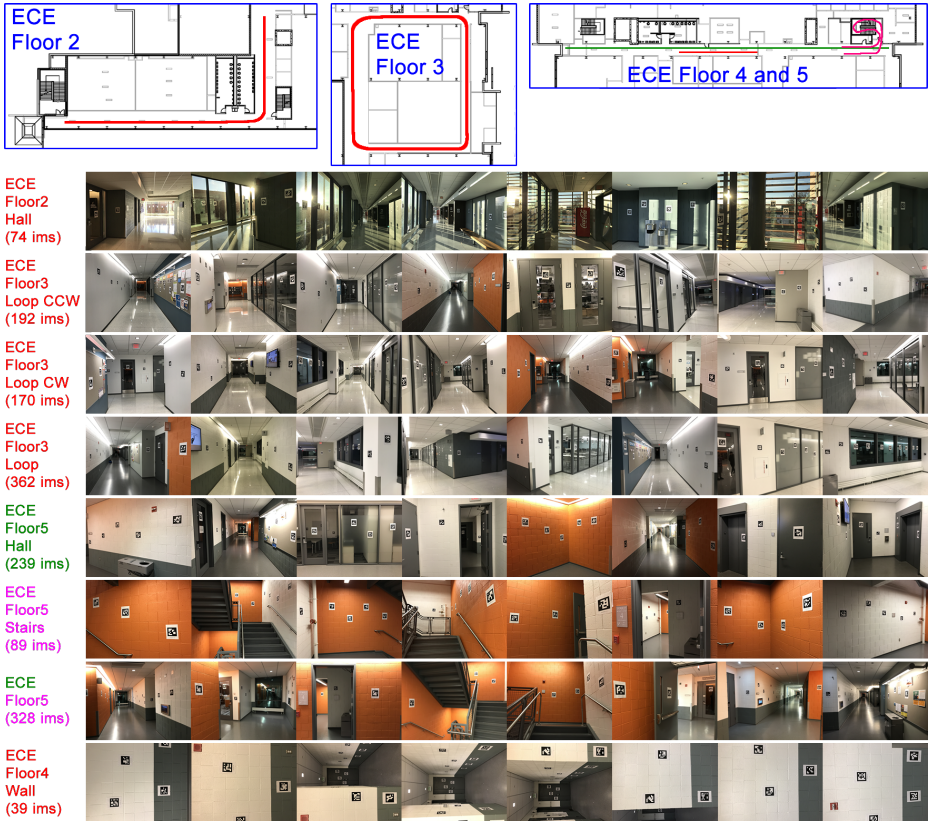


Fig. 1: Example images for all ECE image collections. ECE Floor5 is a combination of *ECE Floor5 Hall* and *ECE Floor5 Stairs* (green and magenta paths).

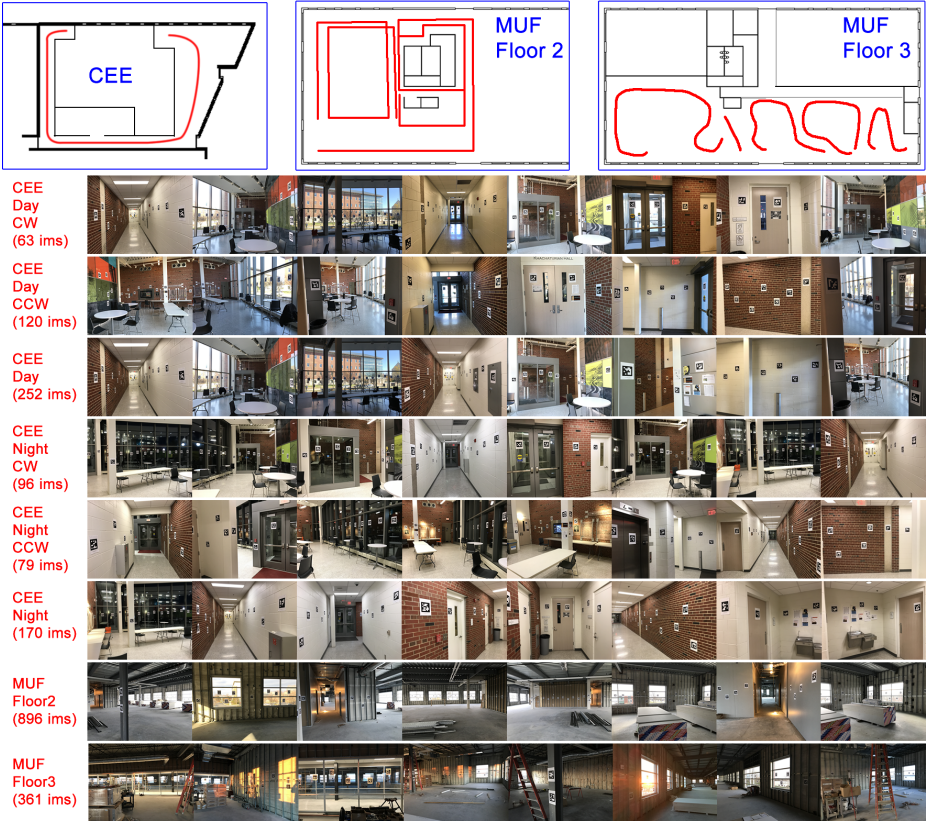


Fig. 2: Examples images for all CEE and MUF image collections.

2 Qualitative Results on Neunert et al. [19] Dataset

Figure 3 shows the qualitative results for each SfM approach processing the Neunert et al. [19] dataset. These datasets were originally from video, so for these results the frames are subsampled by 5 to simulate the data as unordered image collections. Most approaches do well on all these image collections. When MarkerMapper fails, it is because there are not enough markers in the images.

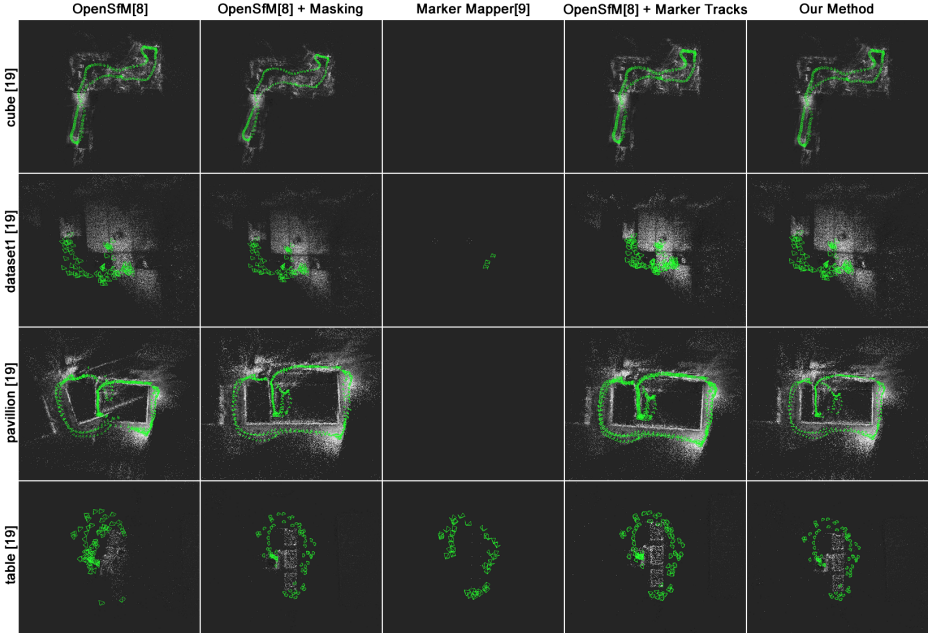


Fig. 3: Qualitative results for Neunert et al. [19] dataset are shown. All algorithms tend to do well on these image collections. These datasets were originally video sequences, so for these results the frames are subsampled by 5 to simulate the data as unordered image collections.

	# Images	# Registered			% Registered		
		No MIM	No MIR	Full	No MIM	No MIR	Full
ECE F3 Loop CCW	192	139	191	191	72.4%	99.5%	99.5%
ECE F3 Loop CW	170	135	170	170	79.4%	100.0%	100.0%
ECE F3 Loop	362	-	-	360	-	-	99.4%
ECE F5 Stairs	89	46	89	89	51.7%	100.0%	100.0%
ECE F4 Wall	39	21	22	39	53.8%	56.4%	100.0%
CEE Day CW	63	33	42	62	47.8%	60.9%	89.9%
CEE Day CCW	120	60	120	119	50.0%	100.0%	99.2%
CEE Night CCW	79	-	-	77	-	-	97.5%
CEE Night	170	158	157	170	92.9%	92.4%	100.0%

Table 1: We provide the number of images registered and the percent registered for our method without marker informed matching (denoted as *No MIM*), our method without marker informed resectioning (denoted as *No MIR*), and our full method (denoted as *Full*). The next closest method is OpenSfM with markers masked, which has an average percent registered of 42.3%. Thus, marker informed matching and marker informed resectioning both help, but are better when used together.

3 Ablation Study Continued

Table 1 provides the number of images registered and the percent registered for our method without marker informed matching (denoted as *No MIM*), our method without marker informed resectioning (denoted as *No MIR*), and our full method (denoted as *Full*). The mean percent registered for *No MIM*=49.8%, for *No MIR*=67.7%, and for *Full*=98.4%. The next closest method is OpenSfM with markers masked, which has an average percent registered of 42.3%. Thus, marker informed matching and marker informed resectioning both help, but are better when used together.