

# CS 463: Status Report

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1 February 2013

Eric Henderson and James Savage have been working on algorithms for finding points of interest, and have working code for both a Kirsch Operator algorithm and Minimum Direction of Variance algorithm. We are currently using the variance method as our primary POI algorithm, however tweaks were made to its process. Instead of finding just points, our algorithm attempts to maximize a threshold on a minimized directional variance matrix of an image, while keeping at least a certain number of POI pixels. This result is a binary matrix which we then transform into a list of bounding boxes for regions of interest to them be matched.

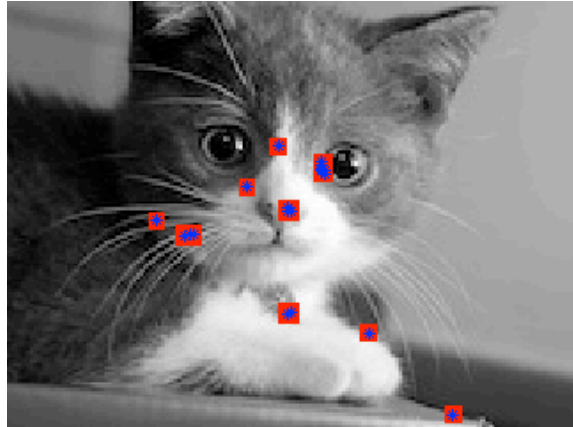


Fig 1. Results of minimum directions of variance algorithm, with raw points marked in blue, and regions of interest represented as red rectangles.

Nick Kamper and Laura Moss worked on a spiral algorithm for point matching, given points of interest, however they are having trouble getting optimal results on an image pair, because it often returns corresponding points that are too close to the original, as shown in Table 1, where all matches are found around 1–2 pixels from their source. If the points are the same, that would mean that the distance of the object away from the camera is infinite or very far away. Hopefully we can try to investigate how to reduce the number of inappropriate matches, perhaps by altering our spiral iteration.

Matches in A				Matches in B			
78	350	78	350	66	350	67	351
79	263	81	261	66	263	63	264
82	311	83	311	69	311	70	313
84	373	85	374	71	373	69	375
89	241	87	239	76	241	76	241
104	347	107	344	79	326	77	327
173	200	174	201	92	347	93	347
206	267	206	267	212	352	216	349
224	352	225	352	336	294	335	294
293	332	294	332	337	281	338	279
297	347	296	352	344	313	346	313
340	298	340	298	348	307	348	307
347	294	347	294				
355	313	355	313				
360	307	361	308				

Table 1. Interesting points from image A and their “corresponding” matches in image B. (Source Row, Source Column, Match Row, Match Column), with a  $\sigma = 0.1$  (for the gaussian filter), minimum pixel count of 20, and threshold of 5.