

ALGORITHM				TRAINING						TESTING																
	DESCRIPTION	RULES TESTED	DATA		PREDICTIONS			CONFUSION MATRIX		PERFORMANCE			DATA		PREDICTIONS			CONFUSION MATRIX		PERFORMANCE						
BASELINE	Assume all pixels are not fingers.	2	Images	3				ACTUAL	PREDICTED		ACCURACY	7372+0 = 0.94		Images	2				ACTUAL	PREDICTED		ACCURACY	4533+0 = 0.93			
			Finger	Not Finger					Finger	Not Finger		Finger	Not Finger							Finger	Not Finger		Finger	Not Finger		
			0	495					0	7372		0	341							0	4533		0	341	0	4533
			0	495					0	7372		0	341							0	4533		0	341	0	4533
			0	495					0	7372		0	341							0	4533		0	341	0	4533
KNOWLEDGE ENGINEERING	Search for this pattern:	0	Images	3				ACTUAL	PREDICTED		ACCURACY	7372+9 = 0.94		Images	2				ACTUAL	PREDICTED		ACCURACY	4533+0 = 0.93			
	Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger			
	Not Finger Pixels		7372	9					486	9		341	0							4533	0		341	0	4533	
	Total Pixels		7867	9					486	9		341	0							4533	0		341	0	4533	
	Search for these patterns:	0	Images	3				ACTUAL	PREDICTED		ACCURACY	7365+48 = 0.94		Images	2				ACTUAL	PREDICTED		ACCURACY	4532+0 = 0.93			
	Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger			
	Not Finger Pixels		7372	48					447	48		341	1							4532	0		341	0	4532	
	Total Pixels		7867	48					447	48		341	1							4532	0		341	0	4532	
	MEMORIZATION	Search for matches to 413 unique patterns in training data:	0	Images	3				ACTUAL	PREDICTED		ACCURACY	7356+495 = 1.00		Images	2				ACTUAL	PREDICTED		ACCURACY	4512+11 = 0.93		
		Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger
Not Finger Pixels		7372		495	0					495	330		11	330							11	330		11	330	
Total Pixels		7867		495	0					495	330		11	330							11	330		11	330	
Search for matches to 2160 unique patterns in training data:		0	Images	30				ACTUAL	PREDICTED		ACCURACY	71956+3095 = 0.99		Images	2				ACTUAL	PREDICTED		ACCURACY	4473+47 = 0.93			
Finger Pixels			3095	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger	
Not Finger Pixels			72840	3095					0	3095		294	47							294	47		294	47	294	
Total Pixels			75935	3095					0	3095		294	47							294	47		294	47	294	
BRUTE FORCE		Search for best 1 pixel rule that makes fewest errors on the training set:	162	Images	3				ACTUAL	PREDICTED		ACCURACY	479+5574 = 0.77		Images	2				ACTUAL	PREDICTED		ACCURACY	327+3553 = 0.80		
		Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger
	Not Finger Pixels	7372		479	16					479	14		327	14							327	14		327	14	
	Total Pixels	7867		479	16					479	14		327	14							327	14		327	14	
	Search for best 2 pixel rule that makes fewest errors on the training set:	12,960	Images	3				ACTUAL	PREDICTED		ACCURACY	362+7027 = 0.94		Images	2				ACTUAL	PREDICTED		ACCURACY	254+4296 = 0.93			
	Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger	
	Not Finger Pixels		7372	362					133	362		87	254							87	254		87	254	87	
	Total Pixels		7867	362					133	362		87	254							87	254		87	254	87	
	Search for best 3 pixel rule that makes fewest errors on the training set:	682,560	Images	3				ACTUAL	PREDICTED		ACCURACY	327+7299 = 0.97		Images	2				ACTUAL	PREDICTED		ACCURACY	226+4431 = 0.96			
	Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger	
	Not Finger Pixels		7372	327					168	327		115	226							115	226		115	226	115	
	Total Pixels		7867	327					168	327		115	226							115	226		115	226	115	
DECISION TREE	Grow depth 3 tree using information gain heuristic	576	Images	3				ACTUAL	PREDICTED		ACCURACY	330+7293 = 0.96		Images	2				ACTUAL	PREDICTED		ACCURACY	238+4428 = 0.96			
	Finger Pixels		495	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger	
	Not Finger Pixels		7372	330					165	330		103	238							103	238		103	238	103	
	Total Pixels		7867	330					165	330		103	238							103	238		103	238	103	
	Grow depth 4 tree using information gain heuristic	1215	Images	30				ACTUAL	PREDICTED		ACCURACY	72305+2135 = 0.98		Images	2				ACTUAL	PREDICTED		ACCURACY	180+4470 = 0.95			
	Finger Pixels		3095	Finger					Not Finger	Finger		Not Finger	Finger							Not Finger	Finger		Not Finger	Finger	Not Finger	
	Not Finger Pixels		72840	2135					960	2135		161	180							161	180		161	180	161	
	Total Pixels		75935	2135					960	2135		161	180							161	180		161	180	161	