

We have also performed the experiments using the random forest models. For the limitation of space, we did not include them in our paper. Table 1 shows the results that we obtained using the random forest models. RF_{CDN} uses CDN to represent classes and their dependency relations, while RF_{ICDN} uses ICDN to represent classes and their dependency relations. RF_{CDN} and RF_{ICDN} use random forest models to predict the probability of a specific class to be buggy, and use an adaptive mechanism to determine the number of execution times. Note that RF_{CDN} is actually a corrected version of Qu et al.’s approach using random forest models. From the table, we can observe that RF_{CDN} performs better than the corresponding Ree, and RF_{ICDN} performs better than the corresponding RF_{CDN} . The fact that RF_{CDN} performs better than the corresponding Ree is one of the conclusions that Qu et al. obtained in their work. It is also valid in our experiments.

Table 1 Comparison of the final $\overline{P_{opt}^t}$ values obtained by Ree, RF_{CDN} , and RF_{ICDN} when applied to the eighteen subject systems with ε being 0.0001.

System	Ree	RF_{CDN}	RF_{ICDN}	Ree	RF_{CDN}	RF_{ICDN}	Ree	RF_{CDN}	RF_{ICDN}
	effort=20%			effort=30%			effort=40%		
Camel	0.4214	0.4669	0.4777	0.4407	0.4961	0.5164	0.4725	0.5358	0.5661
Ivy	0.2039	0.2317	0.2206	0.2350	0.2853	0.2628	0.2734	0.3476	0.3185
Log4j	0.3875	0.5102	0.5209	0.4420	0.5683	0.5835	0.4866	0.5975	0.6221
Poi	0.6281	0.6298	0.6305	0.6591	0.6539	0.6621	0.6793	0.6735	0.6840
Synapse	0.4326	0.4395	0.4603	0.4608	0.4730	0.4920	0.4854	0.4993	0.5153
Tomcat	0.2671	0.2887	0.2955	0.3139	0.3415	0.3459	0.3668	0.3921	0.3890
Velocity	0.5492	0.5871	0.5840	0.5932	0.6299	0.6227	0.6255	0.6619	0.6592
Xalan	0.6517	0.6051	0.5776	0.6843	0.6495	0.6302	0.7108	0.6850	0.6743
JDT Core	0.3798	0.4060	0.4314	0.4177	0.4536	0.4733	0.4517	0.4929	0.5141
Equinox	0.6198	0.6422	0.6203	0.6051	0.6394	0.6249	0.6082	0.6481	0.6404
Lucene	0.4406	0.4706	0.4895	0.4908	0.5349	0.5496	0.5524	0.5982	0.6084
DrJava	0.3026	0.3633	0.6702	0.3294	0.4161	0.6841	0.3706	0.4573	0.6905
GenoViz	0.2257	0.3546	0.7249	0.3250	0.4376	0.7378	0.4150	0.5138	0.7517
HtmlUnit	0.2323	0.2975	0.3039	0.3028	0.3857	0.3863	0.3712	0.4672	0.4630
Jmol	0.2135	0.2075	0.4661	0.2461	0.2278	0.4715	0.2967	0.2592	0.4938
Jikes RVM	0.1939	0.2610	0.2664	0.2444	0.3264	0.3299	0.2861	0.3832	0.3965
Jppf	0.3576	0.3804	0.4081	0.4181	0.47037	0.4754	0.4778	0.5556	0.5444
Jump	0.2641	0.3318	0.5388	0.3325	0.3946	0.5568	0.3930	0.4635	0.5715
	RF_{CDN} vs. Ree		RF_{ICDN} vs. RF_{CDN}	RF_{CDN} vs. Ree		RF_{ICDN} vs. RF_{CDN}	RF_{CDN} vs. Ree		RF_{ICDN} vs. RF_{CDN}
Win/Tie/Loss	16/0/2		14/0/4	15/0/3		14/0/4	15/0/3		11/0/7