

Table I. Evaluation results and statistical test in different model sizes for three downstream tasks, where F, L and A respectively represent the performance of the classifier built based on the code embedding obtained by the first special token, the last special token and the average-pooling of all code tokens exclude special tokens. The bold value indicates the optimal performance value under the same PTM. The p1 represents the p-value of the significance test on the performance comparison of the first special token and the average-pooling of all code tokens. p2 represents the p-value of the significance test on the last special token and the average-pooling of all code tokens. # represents  $p \geq 0.05$ , \* represents  $p < 0.05$ , \*\* represents  $p < 0.01$ , \*\*\* represents  $p < 0.001$ . The color represents the effect size, the dark gray represents the large, and the colorless represents the negligible. Mid-gray represents medium, light gray represents small. Bold values represent the maximum performance improvement ratio for each row under % column.

Tasks	Datasets	Metrics	CodeT5-60M					CodeT5-220M					CodeT5-770M					CodeGen-350M				CodeGen-2B		
			F	L	A	p1	p2	F	L	A	p1	p2	F	L	A	p1	p2	L	A	p2	L	A	p2	
JIT	go	ACC	0.604	0.609	0.616	***	***	0.601	0.600	0.616	***	***	0.587	0.603	0.617	***	***	0.604	0.618	*	0.596	0.617	***	
		F1	0.575	0.584	0.581	#	#	0.542	0.583	0.573	***	***	0.569	0.569	0.583	**	***	0.561	0.574	*	0.577	0.580	#	
		MCC	0.242	0.252	0.255	***	#	0.212	0.246	0.246	***	#	0.226	0.229	0.257	***	***	0.230	0.249	***	0.245	0.258	***	
	platform	ACC	0.778	0.772	0.798	***	***	0.612	0.629	0.663	***	***	0.710	0.796	0.816	***	***	0.611	0.661	***	0.627	0.663	***	
		F1	0.143	0.153	0.172	***	***	0.560	0.586	0.592	***	***	0.160	0.160	0.172	***	***	0.562	0.594	***	0.546	0.583	***	
		MCC	0.065	0.078	0.103	***	***	0.306	0.342	0.355	***	***	0.096	0.088	0.103	***	***	0.312	0.359	***	0.300	0.347	***	
	gerrit	ACC	0.560	0.562	0.586	#	***	0.760	0.779	0.812	***	***	0.585	0.603	0.605	***	***	0.770	0.825	***	0.777	0.803	#	
		F1	0.383	0.388	0.388	***	***	0.157	0.149	0.178	***	***	0.359	0.379	0.398	***	***	0.149	0.200	***	0.160	0.200	***	
		MCC	0.189	0.195	0.195	***	***	0.087	0.072	0.111	***	***	0.163	0.180	0.211	#	***	0.074	0.137	***	0.089	0.140	***	
	openstack	ACC	0.626	0.616	0.655	***	***	0.572	0.567	0.599	*	***	0.612	0.646	0.667	#	#	0.579	0.621	***	0.568	0.588	#	
		F1	0.562	0.590	0.599	***	#	0.377	0.383	0.390	***	***	0.563	0.574	0.596	***	***	0.379	0.398	***	0.384	0.388	#	
		MCC	0.310	0.349	0.367	***	#	0.182	0.186	0.198	***	***	0.314	0.324	0.363	***	***	0.186	0.212	***	0.195	0.200	***	
	qt	ACC	0.592	0.607	0.638	***	***	0.582	0.606	0.672	***	***	0.560	0.659	0.681	***	***	0.584	0.683	***	0.618	0.660	*	
		F1	0.336	0.342	0.335	#	***	0.330	0.342	0.340	***	*	0.324	0.324	0.348	***	***	0.336	0.339	***	0.345	0.340	***	
		MCC	0.205	0.210	0.193	***	***	0.194	0.210	0.200	#	***	0.188	0.176	0.211	***	***	0.205	0.198	***	0.217	0.203	***	
CVD	Devign	ACC	0.564	0.571	0.597	***	***	0.546	0.557	0.593	***	***	0.538	0.535	0.578	***	***	0.557	0.599	***	0.563	0.591	***	
		F1	0.540	0.560	0.578	***	***	0.510	0.540	0.573	***	***	0.520	0.511	0.562	***	***	0.506	0.587	***	0.536	0.578	***	
		MCC	0.132	0.147	0.195	***	***	0.093	0.118	0.187	***	***	0.087	0.070	0.158	***	***	0.111	0.202	***	0.132	0.192	***	
	CWE119	ACC	0.694	0.804	0.855	***	***	0.561	0.790	0.879	***	***	0.551	0.702	0.841	***	***	0.647	0.865	***	0.647	0.803	***	
		F1	0.686	0.767	0.816	***	***	0.600	0.740	0.826	***	***	0.585	0.634	0.781	***	***	0.660	0.820	***	0.658	0.772	***	
		MCC	0.487	0.621	0.705	***	***	0.298	0.578	0.737	***	***	0.288	0.396	0.659	***	***	0.437	0.716	***	0.437	0.637	***	
	CWE399	ACC	0.716	0.710	0.739	***	***	0.694	0.751	0.735	***	***	0.668	0.734	0.744	***	*	0.708	0.740	***	0.718	0.728	#	
		F1	0.343	0.342	0.495	***	***	0.272	0.393	0.479	***	***	0.309	0.363	0.424	***	***	0.356	0.483	***	0.312	0.464	***	
		MCC	0.187	0.161	0.340	***	***	0.088	0.238	0.319	***	***	0.111	0.197	0.263	***	***	0.192	0.325	***	0.151	0.300	***	
CCD	BigCloneBench	ACC	0.664	0.591	0.720	***	***	0.635	0.665	0.726	***	***	0.653	0.591	0.706	***	***	0.582	0.930	***	0.738	0.931	***	
		F1	0.318	0.327	0.441	***	***	0.376	0.395	0.449	***	***	0.388	0.344	0.441	***	***	0.346	0.778	***	0.451	0.773	***	
		MCC	0.205	0.203	0.367	***	***	0.286	0.308	0.378	***	***	0.300	0.236	0.372	***	***	0.248	0.747	***	0.373	0.739	***	