

Table 3: Detection performance of Gitor with global call, halstead metrics and literal metrics.

	Global Call: xmet cref exct				Halstead Metrics: hvoc hdiff heff				Literal Metrics: nbltrl ncltrl nsltrl nnulltrl nmnltrl			
Cosine = 0.50	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	1	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.985	0.985	0.985	0.985	1	1	1	1	0.972	0.972	0.972	0.972
ST-3 Recall	0.971	0.972	0.972	0.972	0.996	0.996	0.996	0.996	0.880	0.879	0.880	0.879
MT-3 Recall	0.911	0.912	0.915	0.915	0.980	0.979	0.979	0.979	0.591	0.578	0.581	0.580
Type-4 Recall	0.839	0.845	0.867	0.872	0.873	0.875	0.877	0.874	0.356	0.276	0.284	0.289
Precision	0.717	0.715	0.710	0.708	0.691	0.690	0.690	0.690	0.855	0.857	0.855	0.855
F1	0.791	0.791	0.793	0.793	0.789	0.788	0.789	0.788	0.642	0.601	0.606	0.608
Cosine = 0.60	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	1	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.985	0.984	0.985	0.984	1	1	1	1	0.972	0.971	0.971	0.971
ST-3 Recall	0.960	0.960	0.960	0.960	0.995	0.995	0.995	0.995	0.853	0.861	0.861	0.851
MT-3 Recall	0.885	0.888	0.893	0.893	0.976	0.975	0.975	0.975	0.525	0.532	0.536	0.516
Type-4 Recall	0.747	0.752	0.782	0.789	0.817	0.820	0.820	0.879	0.272	0.212	0.216	0.218
Precision	0.737	0.735	0.730	0.729	0.701	0.699	0.700	0.699	0.855	0.860	0.857	0.856
F1	0.776	0.777	0.783	0.783	0.782	0.781	0.781	0.781	0.588	0.559	0.561	0.558
Cosine = 0.70	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	1	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.984	0.984	0.984	0.984	0.999	0.999	0.999	0.999	0.971	0.971	0.971	0.970
ST-3 Recall	0.954	0.954	0.955	0.954	0.995	0.995	0.995	0.995	0.834	0.829	0.834	0.833
MT-3 Recall	0.843	0.844	0.851	0.851	0.971	0.971	0.971	0.970	0.463	0.448	0.456	0.455
Type-4 Recall	0.618	0.626	0.660	0.670	0.738	0.743	0.743	0.742	0.187	0.149	0.151	0.150
Precision	0.762	0.761	0.754	0.753	0.717	0.714	0.715	0.715	0.864	0.865	0.864	0.864
F1	0.747	0.748	0.756	0.759	0.771	0.771	0.771	0.771	0.531	0.504	0.508	0.507
Cosine = 0.80	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	1	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.982	0.981	0.981	0.981	0.999	0.998	0.998	0.998	0.969	0.968	0.968	0.968
ST-3 Recall	0.944	0.944	0.945	0.945	0.993	0.995	0.995	0.995	0.813	0.811	0.814	0.813
MT-3 Recall	0.771	0.774	0.788	0.789	0.955	0.956	0.956	0.955	0.412	0.392	0.397	0.396
Type-4 Recall	0.449	0.457	0.493	0.504	0.630	0.635	0.634	0.634	0.119	0.094	0.094	0.094
Precision	0.810	0.808	0.798	0.796	0.738	0.735	0.737	0.737	0.874	0.870	0.871	0.870
F1	0.698	0.701	0.713	0.716	0.751	0.751	0.752	0.752	0.479	0.458	0.459	0.459
Cosine = 0.90	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	0.999	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.969	0.968	0.970	0.969	0.998	0.998	0.998	0.998	0.900	0.899	0.899	0.899
ST-3 Recall	0.907	0.907	0.913	0.913	0.989	0.990	0.989	0.989	0.784	0.777	0.777	0.776
MT-3 Recall	0.587	0.592	0.616	0.619	0.900	0.905	0.905	0.904	0.333	0.320	0.321	0.321
Type-4 Recall	0.229	0.231	0.260	0.266	0.454	0.465	0.459	0.459	0.059	0.048	0.048	0.048
Precision	0.873	0.872	0.864	0.861	0.782	0.776	0.782	0.782	0.892	0.890	0.889	0.889
F1	0.584	0.586	0.604	0.607	0.707	0.709	0.709	0.709	0.420	0.408	0.409	0.408
Cosine = 0.93	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	0.999	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.961	0.960	0.960	0.960	0.998	0.998	0.998	0.998	0.899	0.897	0.897	0.897
ST-3 Recall	0.852	0.856	0.862	0.861	0.982	0.984	0.984	0.983	0.768	0.762	0.762	0.762
MT-3 Recall	0.482	0.491	0.507	0.509	0.829	0.839	0.837	0.836	0.305	0.286	0.286	0.286
Type-4 Recall	0.155	0.158	0.176	0.180	0.376	0.386	0.381	0.379	0.043	0.035	0.035	0.035
Precision	0.895	0.895	0.892	0.890	0.808	0.800	0.806	0.806	0.903	0.904	0.904	0.904
F1	0.523	0.526	0.540	0.543	0.677	0.680	0.680	0.679	0.402	0.391	0.390	0.391
Cosine = 0.96	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	0.999	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	1	0.970	0.970	0.970	0.970
VST-3 Recall	0.950	0.949	0.950	0.950	0.998	0.998	0.998	0.998	0.896	0.885	0.885	0.885
ST-3 Recall	0.768	0.769	0.778	0.781	0.939	0.940	0.940	0.939	0.736	0.716	0.717	0.715
MT-3 Recall	0.360	0.362	0.382	0.388	0.705	0.722	0.716	0.715	0.256	0.248	0.248	0.248
Type-4 Recall	0.086	0.088	0.098	0.101	0.267	0.278	0.271	0.270	0.026	0.023	0.023	0.023
Precision	0.921	0.920	0.919	0.918	0.843	0.836	0.842	0.841	0.926	0.925	0.924	0.925
F1	0.450	0.452	0.464	0.467	0.618	0.625	0.622	0.621	0.376	0.371	0.371	0.371
Cosine = 0.99	16	32	64	128	16	32	64	128	16	32	64	128
T-1 Recall	0.999	0.999	0.999	0.999	1	1	1	0.999	0.992	0.992	0.992	0.992
T-2 Recall	0.995	0.995	0.995	0.995	1	1	1	0.999	0.970	0.970	0.970	0.970
VST-3 Recall	0.884	0.886	0.892	0.892	0.989	0.989	0.989	0.989	0.824	0.815	0.815	0.815
ST-3 Recall	0.636	0.638	0.646	0.646	0.705	0.711	0.708	0.708	0.558	0.542	0.537	0.538
MT-3 Recall	0.219	0.221	0.225	0.226	0.354	0.371	0.361	0.361	0.161	0.160	0.160	0.160
Type-4 Recall	0.025	0.026	0.027	0.028	0.092	0.099	0.094	0.093	0.010	0.010	0.010	0.010
Precision	0.947	0.947	0.946	0.946	0.921	0.916	0.921	0.920	0.956	0.955	0.955	0.954
F1	0.363	0.365	0.367	0.368	0.450	0.459	0.454	0.453	0.329	0.328	0.327	0.327