Workflow Synthesis for Classification Task Based on Genetic Search and Meta-Learning
Appendix A

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Comparison with baselines on all the datasets

Table 1: Comparison with the baselines

Dataset	RF	SVM	Dageva	TPOT	Workflow
ada-agnostic	0.758	0.7576	0.7506	**0.7679**	0.7586
adult	0.7803	0.7691	0.7519	**0.8112**	0.8006
agaricus-lepiota	**1.0**	**1.0**	0.9926	**1.0**	**1.0**
allbp	0.6837	**0.8009**	0.7973	0.687	0.7726
allhyper	0.7959	0.6856	0.5183	0.6897	**0.827**
allhypo	0.8853	0.7318	0.6107	**0.9063**	0.8758
allrep	0.7337	0.5664	0.4246	0.7023	**0.8076**
analcatdata-aids	0.4583	0.5125	0.5418	0.4583	**0.5751**
analcatdata-asbestos	0.6636	0.7529	0.719	0.7597	**0.8055**
analcatdata-authorship	0.9867	0.99	0.9843	0.9933	**0.9966**
analcatdata-bankruptcy	0.7636	**0.923**	0.3166	0.7636	0.9212
analcatdata-boxing1	0.5238	0.4664	0.4957	0.5581	**0.833**
analcatdata-boxing2	**0.7847**	0.6458	0.3876	0.6654	0.6654
analcatdata-creditscore	**1.0**	0.844	0.7777	**1.0**	**1.0**
analcatdata-cyyoung8092	0.7086	0.7086	0.6666	0.625	**0.7242**
analcatdata-cyyoung9302	0.6973	**0.7927**	0.5523	**0.7927**	**0.7927**
analcatdata-dmft	0.1679	0.1807	0.1854	0.1389	**0.2202**
analcatdata-fraud	0.6117	0.4761	0.5599	0.4761	**0.6857**
analcatdata-germangss	0.2769	0.3024	0.3115	0.3626	**0.5992**
analcatdata-happiness	0.3882	0.5111	**0.5311**	0.4277	0.3222
analcatdata-japansolvent	0.8452	0.8452	0.6266	**0.9212**	**0.9212**
analcatdata-lawsuit	**1.0**	**1.0**	0.7546	0.896	**1.0**
ann-thyroid	0.9703	0.878	0.9731	0.9797	**0.9836**
anneal	**1.0**	**1.0**	0.852	**1.0**	**1.0**
AR10P	0.9157	**0.9657**	0.9327	0.9523	0.9157
australian	0.8521	**0.8852**	0.8501	0.8731	0.8538
auto	0.874	0.8066	0.3333	**0.9802**	0.8797

backache	0.6127	0.4444	0.4924	**0.6375**	0.4642
balance-scale	0.5746	0.9307	0.8231	**0.9623**	0.8055
biomed	0.8058	0.7653	0.786	**0.949**	0.8209
breast	0.981	0.9616	0.9742	0.9686	**0.9873**
breast-cancer	0.5683	0.6307	0.6049	0.6683	**0.6791**
breast-cancer-wisconsin	0.9617	0.9686	0.9458	0.9617	**0.9692**
breast-w	**0.9622**	**0.9622**	0.9501	**0.9622**	0.9557
buggyCrx	0.8951	0.8531	**0.9063**	0.8956	0.8842
calendarDOW	0.5837	0.5798	0.5277	0.5419	**0.5936**
car	0.8636	0.9845	0.7813	**1.0**	**1.0**
car-evaluation	0.9127	0.9191	0.7615	0.9357	**0.9504**
cars	0.8169	0.6725	0.7504	0.8362	**0.9823**
cars1	**0.824**	0.6409	0.5574	0.77	0.7998
chess	0.9911	0.9937	0.9697	**0.9949**	0.9685
churn	0.8965	0.8202	0.8377	**0.9206**	0.8832
clean1	0.9747	**1.0**	0.3313	**1.0**	**1.0**
clean2	**1.0**	**1.0**	0.9858	**1.0**	**1.0**
cleve	0.8393	0.8669	0.7691	0.8411	**0.8935**
cleveland	0.2188	0.2619	0.1729	0.286	**0.3755**
cleveland-nominal	0.2758	0.2934	0.2777	0.2559	**0.3148**
cloud	0.5865	0.2297	0.5366	**0.8803**	0.808
cmc	0.5294	0.4972	0.4549	0.5117	**0.5521**
colic	0.7946	0.8054	0.7382	0.8428	**0.8542**
collins	**1.0**	0.9046	0.9844	**1.0**	**1.0**
colon	0.5897	0.7681	0.6571	**0.7948**	**0.7948**
confidence	0.6444	0.75	**0.7933**	0.6666	0.75
connect-4	0.5407	0.6146	0.5494	0.5828	**0.7321**
corral	**1.0**	0.9498	0.8304	**1.0**	**1.0**
credit-a	0.8602	0.8323	0.8136	0.8482	**0.8664**
credit-g	0.6442	0.6816	0.665	0.6569	**0.7023**
crx	0.844	0.8474	0.7998	0.8228	**0.8478**
dermatology	0.961	**0.987**	0.8854	0.9737	**0.987**
diabetes	0.6677	0.6687	0.6311	0.6551	**0.6835**
dis	0.6544	0.6201	0.7404	0.7139	**0.8175**
dna	0.9566	**0.9596**	0.9255	0.9576	0.9535
ecoli	0.8251	**0.8975**	0.7703	0.7734	0.7734
flags	0.3318	0.3271	0.3083	**0.3844**	0.3533
flare	0.6292	0.6725	0.5988	0.6542	**0.6858**
GAMETES-Epistasis- 2-Way-20atts- 0.1H-EDM-1-1	0.6124	0.6112	0.4937	0.6202	**0.6761**

GAMETES-Epistasis-2-Way-20atts-0.4H-EDM-1-1	0.7219	0.766	0.5331	0.7387	**0.7821**
GAMETES-Epistasis-2-Way-1000atts-0.4H-EDM-1-EDM-1-1	0.5471	0.5374	0.4322	0.5273	**0.7976**
GAMETES-Epistasis-3-Way-20atts-0.2H-EDM-1-1	0.5584	0.5647	0.4818	0.6199	**0.6717**
GAMETES-Heterogeneity-20atts-1600-Het-0.4-0.2-50-EDM-2-001	0.6298	0.6924	0.5383	0.6794	**0.7374**
GAMETES-Heterogeneity-20atts-1600-Het-0.4-0.2-75-EDM-2-001	0.6474	**0.7416**	0.3399	0.7095	0.7312
german	0.6655	0.6668	**0.6966**	0.6741	0.6562
gina-agnostic	0.9457	0.9377	0.8136	0.9411	**0.9619**
gina-prior	0.9538	**0.9688**	0.882	0.9665	0.8742
gina-prior2	0.9364	**0.948**	0.808	0.9414	0.8748
glass	0.5447	0.4316	0.4916	0.4678	**0.7031**
glass2	**0.8535**	**0.8535**	0.6348	**0.8535**	0.8288
grub-damage	**0.5**	0.4333	0.2733	0.4211	0.488
haberman	0.5609	0.5807	0.3863	0.5545	**0.6738**
hayes-roth	0.8403	0.8428	0.716	0.8642	**0.9553**
heart-c	0.8623	0.838	0.7995	0.8175	**0.8898**
heart-h	0.7886	0.786	0.777	0.7604	**0.8037**
heart-statlog	**0.8676**	0.8379	0.8511	**0.8676**	**0.8676**
hepatitis	0.5647	0.546	**0.7327**	0.4776	0.6285
Hill-Valley-with-noise	0.5833	0.7245	0.9099	**0.9933**	0.6083
Hill-Valley-without-noise	0.6659	0.6678	0.9933	**1.0**	0.6732
horse-colic	0.8012	0.8165	0.8274	0.8077	**0.847**
house-votes-84	0.9355	0.9355	0.9256	**0.9539**	0.9357
hungarian	0.7457	0.7225	0.6581	0.7225	**0.7711**
hypothyroid	**0.9007**	0.8102	0.7008	0.8953	0.8746
ionosphere	0.9241	0.9381	0.9012	**0.9754**	0.939
iris	0.9488	**0.9747**	0.9415	0.974	0.974
irish	**1.0**	0.9913	0.9261	**1.0**	**1.0**
kdd-JapaneseVowels	0.9639	0.993	0.8466	**0.9956**	0.9925
kdd-synthetic-control	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
kr-vs-kp	0.9899	**0.9962**	0.9649	0.9949	0.9924
krkopt	0.4929	0.6476	0.5691	**0.8735**	0.8711
labor	0.9068	**1.0**	0.638	0.9068	**1.0**
led7	0.718	0.7215	**0.7445**	0.7319	0.7281
led24	0.7172	0.7272	0.6868	**0.73**	0.7291

letter	0.9229	0.949	0.9404	**0.973**	0.962
leukemia	0.9397	0.875	0.8874	0.8036	**1.0**
liver-disorder	0.7097	**0.7775**	0.5848	0.6861	0.662
lupus	0.7603	0.7603	**0.8157**	0.6333	0.7179
lymph	0.54	0.5614	**0.7042**	0.5601	0.5542
mfeat-factors	0.9778	**0.9838**	0.9602	0.978	0.9802
mfeat-fourier	0.8609	0.8568	0.8494	0.8879	**0.8902**
mfeat-karhunen	0.9644	**0.9782**	0.9544	0.9723	0.978
mfeat-morphological	0.7176	0.7619	0.6853	0.7639	**0.7764**
mfeat-pixel	0.9624	0.9762	0.9567	**0.9823**	0.9762
mfeat-zernike	0.7864	0.8322	0.8091	0.8418	**0.884**
mnist	0.9385	**0.9601**	0.8838	0.837	0.917
mofn-3-7-10	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
molecular-biology-promoters	**1.0**	0.9629	0.899	**1.0**	**1.0**
monk1	**1.0**	0.9059	0.8016	**1.0**	**1.0**
monk2	0.6182	0.9706	0.626	**1.0**	0.814
monk3	0.9783	**0.9927**	0.8914	**0.9927**	**0.9927**
mushroom	**1.0**	**1.0**	0.9955	**1.0**	**1.0**
mux6	0.9684	**1.0**	0.7249	**1.0**	**1.0**
new-thyroid	0.9296	**1.0**	0.8716	0.9777	0.9571
nursery	0.8937	**1.0**	0.9464	**1.0**	**1.0**
oh0.wc	0.7466	0.8328	0.746	**0.9284**	0.8449
oh5.wc	0.8511	0.7925	0.7542	**0.9035**	0.8225
oh10.wc	0.7129	0.7222	0.6446	**0.8086**	0.7886
oh15.wc	0.5834	0.6871	0.741	**0.8772**	0.7641
optdigits	0.9858	**0.9936**	0.9602	0.9866	0.9929
page-blocks	**0.8135**	0.8119	0.6341	0.795	0.8101
parity5+5	0.8076	0.7327	0.5012	**1.0**	**1.0**
pasture	0.8412	0.8412	0.68	0.8412	**0.9047**
pendigits	0.9862	0.994	0.9832	0.9937	**0.9941**
PIE10P	**1.0**	**1.0**	0.897	**1.0**	**1.0**
pima	0.6574	**0.6722**	0.6667	0.6596	0.6664
postoperative-patient-data	0.3714	0.3529	0.3423	0.3529	**0.427**
prnn-crabs	0.8996	**1.0**	**1.0**	**1.0**	0.9799
prnn-fglass	0.5447	0.4476	**0.5643**	0.5239	0.535
prnn-synth	0.8727	**0.8884**	0.8033	0.8252	0.8565
profb	**0.6102**	0.4936	0.5681	0.522	0.5543
promoters	0.9258	0.9629	0.9657	**1.0**	**1.0**
satimage	0.8937	**0.907**	0.8655	0.8981	0.888
schizo	0.8427	0.5995	0.3808	0.963	**1.0**
segmentation	0.9769	0.977	0.9191	0.9804	**0.9856**
shuttle	0.6442	0.6082	0.8136	0.9419	**0.9427**
sleep	0.6173	0.6146	0.61	0.6541	**0.6556**

solar-flare-1	0.6475	**0.673**	0.4206	0.6595	0.6659
solar-flare-2	0.5995	**0.6495**	0.6419	0.5764	0.6274
sonar	0.8629	0.8629	0.7593	0.8641	**0.9029**
soybean	0.96	0.9593	0.7743	0.9466	**0.9613**
spambase	**0.9501**	0.9223	0.9036	0.9495	0.9377
spect	0.7536	0.8029	0.6133	**0.8194**	0.7742
spectf	0.901	0.8528	0.704	**0.9309**	0.8603
spectrometer	0.3229	0.3386	0.3208	**0.3527**	0.3264
splice	**0.9696**	0.9629	0.7637	0.9606	0.9583
sylva-agnostic	0.9591	0.9717	0.9562	0.9687	**0.9719**
sylva-prior	0.9658	0.9742	0.9614	0.9768	**0.9779**
tae	**0.7432**	0.6837	0.2598	0.5753	0.6634
threeOf9	0.9765	**1.0**	0.9845	0.9843	**1.0**
tic-tac-toe	0.9635	0.9863	0.7566	**1.0**	0.9726
tokyo1	0.9343	0.9326	0.9238	0.9093	**0.938**
TOX-171	0.7379	**1.0**	0.6375	**1.0**	0.9285
tr11.wc	0.57	0.6005	0.6088	**0.7626**	0.5749
tr12.wc	**0.8884**	0.669	0.5867	0.8871	0.8142
tr23.wc	0.5307	0.4626	0.5648	**0.9845**	0.7312
tr31.wc	0.9849	0.9224	0.8915	**1.0**	0.894
tr41.wc	0.6645	0.7974	0.7209	**0.9347**	0.8312
tr45.wc	0.7786	0.7563	0.8557	**0.9314**	0.8166
vehicle	0.7627	0.8179	0.7886	0.8016	**0.8191**
vote	**0.9695**	0.9485	0.9495	0.9485	0.959
vowel	0.9631	**0.9916**	0.6064	0.9916	0.9907
wap.wc	0.5242	0.6142	0.628	**0.6965**	0.6882
waveform-21	0.8554	0.8678	0.8379	0.8631	**0.8734**
waveform-40	0.8628	0.8655	0.8529	0.8704	**0.8736**
white-clover	**0.4565**	0.2666	0.2523	0.4275	0.4393
wine-quality-red	**0.379**	0.3656	0.3001	0.3402	0.3171
wine-quality-white	0.4804	0.4316	0.271	**0.4827**	0.4418
wine-recognition	**1.0**	**1.0**	0.9771	0.9329	**1.0**
xd6	**1.0**	0.985	0.9948	**1.0**	**1.0**
yeast	0.549	0.5296	0.4741	**0.5742**	0.5543
zoo	0.7	0.8747	0.6333	0.8747	**0.9166**