Appendix

1 Numerical results

In this section, the numerical results of our proposed Fed2RC are presented. In particular, Section 1.1 contains the results under a uniform data distribution, while Section 1.2 presents the results under a non-IID (Dirichlet with a concentration parameter $\beta = 0.5$) setting. All the results are reported both in terms of accuracy and F1-score. Finally, Section 1.3 shows the effect of the number of Rocket kernels on Fed2RC.

1.1 IID

Table 1: Comparison between Fed2RC (with $K = 10,000$) and the competitors in terms of accuracy on the UCR archive datasets. Results are obtained with five averaged runs.

Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ACSF1	0.01	0.80	0.38	0.77	0.81	**0.87**
Adiac	0.00	0.48	0.24	0.73	0.52	**0.80**
AllGestureWiimoteX	0.02	0.54	0.29	0.56	0.50	**0.66**
AllGestureWiimoteY	0.02	0.49	0.33	0.63	0.61	**0.67**
AllGestureWiimoteZ	0.02	0.48	0.26	0.56	0.55	**0.64**
ArrowHead	0.11	0.54	0.64	0.75	0.59	**0.90**
BME	0.03	0.76	0.66	0.87	0.48	**0.95**
Beef	0.05	**0.88**	0.58	0.78	0.45	0.73
BeetleFly	0.73	0.71	0.80	0.79	0.66	**0.95**
BirdChicken	0.68	0.67	0.63	0.76	0.82	**0.89**
CBF	0.10	0.49	0.75	0.76	0.89	**0.99**
Car	0.02	0.73	0.74	0.76	0.69	**0.90**
Chinatown	0.98	0.88	0.66	0.94	0.98	**0.99**
ChlorineConcentration	0.13	0.51	0.56	**0.84**	0.72	0.73
CinCECGTorso	0.08	0.52	0.41	0.54	0.57	**0.85**
Coffee	0.94	0.49	0.84	0.99	0.98	**1.00**
Computers	0.72	0.70	0.50	0.68	**0.81**	0.75
CricketX	0.01	0.62	0.31	0.64	0.72	**0.77**
CricketY	0.00	0.57	0.39	0.57	0.72	**0.76**
CricketZ	0.01	0.64	0.29	0.64	0.75	**0.80**
Crop	0.00	0.64	0.58	**0.77**	0.75	0.70
DiatomSizeReduction	0.01	0.74	0.82	0.96	0.67	**0.97**
DistalPhalanxOutlineAgeGroup	0.08	0.64	0.63	**0.74**	0.73	0.71
DistalPhalanxOutlineCorrect	**0.81**	0.77	0.67	0.75	0.76	0.76
DistalPhalanxTW	0.05	0.63	0.59	0.61	**0.67**	**0.67**
DodgerLoopDay	0.01	0.38	0.42	0.34	0.36	**0.65**
DodgerLoopGame	0.67	0.70	0.61	0.62	0.61	**0.89**
DodgerLoopWeekend	0.93	0.91	0.91	0.92	0.93	**0.99**
ECG200	0.87	0.61	0.78	**0.90**	0.87	0.89

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Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ECG5000	0.02	0.85	**0.94**	**0.94**	**0.94**	0.93
ECGFiveDays	0.82	0.91	0.82	0.81	0.86	**1.00**
EOGHorizontalSignal	0.01	**0.74**	0.30	0.57	0.26	0.56
EOGVerticalSignal	0.01	**0.66**	0.34	0.46	0.16	0.47
Earthquakes	0.03	0.42	0.60	0.69	**0.74**	**0.74**
ElectricDevices	0.01	0.41	0.47	0.69	0.72	**0.77**
EthanolLevel	0.11	0.41	0.44	**0.66**	0.33	0.52
FaceAll	0.01	0.74	0.72	0.90	**0.91**	0.78
FaceFour	0.00	0.58	0.83	0.70	0.78	**0.95**
FacesUCR	0.01	0.66	0.69	0.88	0.88	**0.95**
FiftyWords	0.00	0.53	0.51	0.69	0.48	**0.80**
Fish	0.04	0.67	0.73	0.93	0.91	**0.94**
FordA	0.47	0.93	0.50	**0.94**	0.93	**0.94**
FordB	0.11	0.79	0.49	**0.81**	0.79	0.80
FreezerRegularTrain	0.83	0.94	0.80	0.96	0.97	**0.99**
FreezerSmallTrain	0.81	0.76	0.75	0.82	0.72	**0.91**
Fungi	0.03	0.25	0.20	**0.56**	0.41	0.04
GestureMidAirD1	0.00	0.44	0.46	0.54	0.50	**0.68**
GestureMidAirD2	0.00	0.47	0.45	0.48	0.40	**0.65**
GestureMidAirD3	0.00	0.27	0.26	0.27	0.10	**0.35**
GesturePebbleZ1	0.05	0.72	0.72	0.75	0.78	**0.90**
GesturePebbleZ2	0.04	0.77	0.56	0.76	0.77	**0.86**
GunPoint	0.96	0.73	0.71	0.96	0.98	**0.99**
GunPointAgeSpan	0.93	0.90	0.83	0.96	0.80	**1.00**
GunPointMaleVersusFemale	0.99	0.98	0.96	**1.00**	0.88	0.99
GunPointOldVersusYoung	0.97	0.95	0.75	**1.00**	0.94	0.99
Ham	0.74	0.60	0.74	**0.76**	0.66	0.67
HandOutlines	0.83	0.89	0.88	0.77	0.70	**0.93**
Haptics	0.05	0.37	**0.46**	0.40	0.43	**0.46**
Herring	0.52	0.57	**0.62**	0.50	0.61	0.59
HouseTwenty	0.81	0.88	0.67	0.92	0.93	**0.95**
InlineSkate	0.05	0.28	0.25	0.27	0.22	**0.43**
InsectEPGRegularTrain	0.10	0.81	0.83	0.93	**0.97**	0.79
InsectEPGSmallTrain	0.12	0.56	0.83	0.89	**0.90**	0.72
InsectWingbeatSound	0.00	0.49	**0.63**	0.58	0.41	0.61
ItalyPowerDemand	0.95	0.91	0.94	**0.97**	0.95	**0.97**
LargeKitchenAppliances	0.08	0.77	0.37	0.88	**0.90**	0.78
Lightning2	**0.78**	0.66	0.65	0.65	0.73	**0.78**
Lightning7	0.02	0.52	0.64	0.60	0.64	**0.74**
Mallat	0.01	0.43	0.77	**0.98**	0.75	0.95
Meat	0.08	0.69	0.75	0.73	0.77	**0.97**
MedicalImages	0.00	0.56	0.55	0.69	**0.75**	0.69
MelbournePedestrian	0.00	0.89	0.76	**0.95**	0.87	0.88
MiddlePhalanxOutlineAgeGroup	0.21	0.52	**0.63**	0.56	0.55	0.51
MiddlePhalanxOutlineCorrect	0.81	0.75	0.58	0.79	**0.82**	**0.82**
MiddlePhalanxTW	0.10	0.52	**0.61**	0.52	0.59	0.51
MixedShapesRegularTrain	0.02	0.89	0.79	0.94	0.90	**0.95**
MixedShapesSmallTrain	0.02	0.73	0.77	0.85	0.85	**0.90**
MoteStrain	**0.93**	0.71	0.81	0.82	0.90	**0.93**
NonInvasiveFetalECGThorax1	0.00	0.72	0.88	**0.92**	0.90	**0.92**
NonInvasiveFetalECGThorax2	0.00	0.78	0.90	0.92	0.88	**0.95**
OSULeaf	0.02	0.45	0.40	0.86	**0.95**	0.72
OliveOil	0.05	0.65	0.40	**0.88**	0.44	**0.88**
PLAID	0.01	0.75	0.34	0.13	0.07	**0.92**
PhalangesOutlinesCorrect	0.79	0.18	0.65	0.82	0.80	**0.83**

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Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
Phoneme	0.00	**0.47**	0.08	0.25	0.32	0.18
PickupGestureWiimoteZ	0.02	0.08	0.48	0.43	0.50	**0.78**
PigAirwayPressure	0.00	**0.33**	0.04	0.25	0.12	0.17
PigArtPressure	0.00	0.28	0.04	**0.76**	0.18	0.60
PigCVP	0.00	0.38	0.06	0.26	0.13	**0.60**
Plane	0.07	0.90	0.96	0.99	**1.00**	**1.00**
PowerCons	0.93	0.82	0.93	**0.98**	0.92	0.97
ProximalPhalanxOutlineAgeGroup	0.14	0.81	**0.85**	0.84	**0.85**	0.75
ProximalPhalanxOutlineCorrect	0.89	0.79	0.78	**0.91**	0.90	0.89
ProximalPhalanxTW	0.09	0.73	0.71	0.77	**0.79**	0.77
RefrigerationDevices	0.12	**0.54**	0.36	0.51	**0.54**	0.51
Rock	0.04	0.55	0.81	0.48	0.42	**0.89**
ScreenType	0.23	0.43	0.38	0.48	**0.62**	0.42
SemgHandGenderCh2	0.33	0.80	0.79	0.82	0.76	**0.93**
SemgHandMovementCh2	0.03	0.45	0.43	0.37	0.39	**0.56**
SemgHandSubjectCh2	0.06	0.74	0.77	0.47	0.46	**0.89**
ShakeGestureWiimoteZ	0.02	0.54	0.56	0.74	0.84	**0.85**
ShapeletSim	0.63	0.79	0.50	0.56	0.76	**0.89**
ShapesAll	0.00	0.62	0.58	**0.87**	0.76	0.86
SmallKitchenAppliances	0.15	0.64	0.39	0.74	**0.81**	**0.81**
SmoothSubspace	0.14	0.82	0.62	0.98	**1.00**	0.96
SonyAIBORobotSurface1	0.71	0.71	0.57	0.64	**0.90**	0.79
SonyAIBORobotSurface2	0.84	0.70	0.80	0.82	**0.97**	0.88
StarLightCurves	0.01	0.96	0.89	0.96	0.86	**0.98**
Strawberry	0.95	0.92	0.83	0.97	0.95	**0.98**
SwedishLeaf	0.00	0.81	0.74	0.94	**0.96**	**0.96**
Symbols	0.07	0.62	0.77	0.90	0.76	**0.96**
SyntheticControl	0.05	0.96	0.82	0.99	**1.00**	0.99
ToeSegmentation1	0.82	0.83	0.56	**0.95**	0.89	0.92
ToeSegmentation2	0.66	0.82	0.52	0.84	0.82	**0.88**
Trace	0.18	0.95	0.51	**1.00**	0.99	**1.00**
TwoLeadECG	0.88	0.66	0.59	0.86	**1.00**	0.99
TwoPatterns	0.03	**1.00**	0.82	**1.00**	0.92	**1.00**
UMD	0.03	0.69	0.71	0.86	0.58	**0.99**
UWaveGestureLibraryAll	0.04	0.88	0.85	0.91	0.79	**0.97**
UWaveGestureLibraryX	0.01	0.73	0.65	0.80	0.77	**0.81**
UWaveGestureLibraryY	0.02	0.64	0.59	0.68	0.63	**0.73**
UWaveGestureLibraryZ	0.01	0.69	0.56	0.71	0.73	**0.74**
Wafer	0.99	0.96	0.94	**1.00**	**1.00**	**1.00**
Wine	0.69	0.69	0.56	0.56	0.57	**0.94**
WordSynonyms	0.02	0.50	0.41	0.59	0.40	**0.71**
Worms	0.06	0.64	0.31	0.65	0.68	**0.69**
WormsTwoClass	**0.77**	0.69	0.52	0.72	0.76	0.65
Yoga	0.80	0.71	0.63	0.74	0.73	**0.90**

Table 2: Comparison between Fed2RC (with $K = 10,000$) and the competitors in terms of F1-score on the UCR archive datasets. Results are obtained with five averaged runs.

Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ACSF1	0.01	0.70	0.34	0.76	0.80	**0.87**
Adiac	0.00	0.34	0.18	0.71	0.47	**0.77**
AllGestureWiimoteX	0.02	0.29	0.29	0.56	0.47	**0.65**
AllGestureWiimoteY	0.02	0.22	0.31	0.63	0.61	**0.67**
AllGestureWiimoteZ	0.02	0.26	0.25	0.55	0.52	**0.64**

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Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ArrowHead	0.11	0.43	0.63	0.75	0.54	**0.90**
BME	0.03	0.73	0.65	0.87	0.45	**0.95**
Beef	0.05	**0.78**	0.55	**0.78**	0.40	0.73
BeetleFly	0.73	0.63	0.79	0.78	0.57	**0.95**
BirdChicken	0.68	0.53	0.62	0.76	0.79	**0.90**
CBF	0.10	0.49	0.75	0.74	0.88	**0.99**
Car	0.02	0.65	0.75	0.74	0.69	**0.89**
Chinatown	0.98	0.72	0.63	0.92	0.97	**0.99**
ChlorineConcentration	0.13	0.43	0.31	**0.81**	0.68	0.69
CinCECGTorso	0.08	0.44	0.41	0.53	0.57	**0.85**
Coffee	0.94	0.12	0.80	0.99	0.98	**1.00**
Computers	0.72	0.45	0.50	0.68	**0.81**	0.76
CricketX	0.01	0.51	0.30	0.64	0.72	**0.77**
CricketY	0.00	0.45	0.38	0.57	0.71	**0.75**
CricketZ	0.01	0.50	0.29	0.62	0.73	**0.78**
Crop	0.00	0.37	0.56	**0.76**	0.74	0.68
DiatomSizeReduction	0.01	0.66	0.65	0.95	0.52	**0.96**
DistalPhalanxOutlineAgeGroup	0.08	0.50	0.45	**0.73**	**0.73**	0.69
DistalPhalanxOutlineCorrect	**0.81**	0.79	0.61	0.73	0.74	**0.81**
DistalPhalanxTW	0.05	0.45	0.27	0.47	**0.52**	**0.52**
DodgerLoopDay	0.01	0.27	0.41	0.30	0.28	**0.63**
DodgerLoopGame	0.67	0.46	0.60	0.58	0.59	**0.88**
DodgerLoopWeekend	0.93	0.22	0.89	0.89	0.91	**0.97**
ECG200	0.87	0.46	0.76	0.89	0.86	**0.92**
ECG5000	0.02	**0.87**	0.59	0.56	0.56	0.57
ECGFiveDays	0.82	0.75	0.82	0.81	0.86	**1.00**
EOGHorizontalSignal	0.01	**0.69**	0.28	0.56	0.22	0.54
EOGVerticalSignal	0.01	**0.48**	0.27	0.45	0.10	0.42
Earthquakes	0.03	0.28	**0.53**	0.46	0.52	0.21
ElectricDevices	0.01	0.31	0.35	0.62	0.63	**0.68**
EthanolLevel	0.11	0.35	0.32	**0.62**	0.28	0.46
FaceAll	0.01	0.58	0.69	**0.90**	**0.90**	0.83
FaceFour	0.00	0.48	0.83	0.69	0.78	**0.96**
FacesUCR	0.01	0.52	0.63	0.86	0.84	**0.94**
FiftyWords	0.00	0.37	0.32	0.47	0.21	**0.66**
Fish	0.04	0.59	0.72	0.93	0.91	**0.94**
FordA	0.47	0.90	0.49	**0.94**	0.93	**0.94**
FordB	0.11	0.76	0.49	**0.81**	0.79	0.80
FreezerRegularTrain	0.83	0.50	0.80	0.96	0.97	**0.99**
FreezerSmallTrain	0.81	0.50	0.75	0.82	0.71	**0.91**
Fungi	0.03	0.16	0.14	**0.55**	0.32	0.00
GestureMidAirD1	0.00	0.34	0.44	0.54	0.46	**0.67**
GestureMidAirD2	0.00	0.33	0.41	0.46	0.35	**0.64**
GestureMidAirD3	0.00	0.18	0.24	0.26	0.07	**0.32**
GesturePebbleZ1	0.05	0.66	0.71	0.72	0.75	**0.89**
GesturePebbleZ2	0.04	0.72	0.54	0.73	0.76	**0.86**
GunPoint	0.96	0.68	0.71	0.96	0.98	**0.99**
GunPointAgeSpan	0.93	0.44	0.83	0.95	0.79	**1.00**
GunPointMaleVersusFemale	0.99	0.44	0.96	**1.00**	0.87	0.99
GunPointOldVersusYoung	0.97	0.52	0.72	**1.00**	0.94	0.99
Ham	0.74	0.53	0.74	**0.75**	0.63	0.70
HandOutlines	0.83	0.90	0.86	0.74	0.58	**0.95**
Haptics	0.05	0.28	0.43	0.39	0.40	**0.46**
Herring	0.52	**0.55**	0.49	0.47	0.52	0.49
HouseTwenty	0.81	0.30	0.67	0.92	0.93	**0.94**
InlineSkate	0.05	0.20	0.25	0.26	0.18	**0.43**
InsectEPGRegularTrain	0.10	0.58	0.60	0.87	**0.92**	0.76
InsectEPGSmallTrain	0.12	0.41	0.60	**0.84**	0.77	0.70
InsectWingbeatSound	0.00	0.38	**0.63**	0.58	0.39	0.60

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Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ItalyPowerDemand	0.95	0.89	0.94	**0.97**	0.95	**0.97**
LargeKitchenAppliances	0.08	0.49	0.37	0.88	**0.90**	0.78
Lightning2	0.78	0.74	0.65	0.62	0.73	**0.80**
Lightning7	0.02	0.35	0.56	0.59	0.60	**0.74**
Mallat	0.01	0.32	0.71	**0.98**	0.70	0.95
Meat	0.08	0.55	0.71	0.72	0.74	**0.97**
MedicalImages	0.00	0.40	0.41	0.64	**0.69**	0.64
MelbournePedestrian	0.00	0.67	0.74	**0.95**	0.86	0.88
MiddlePhalanxOutlineAgeGroup	0.21	0.35	**0.50**	0.49	0.43	0.45
MiddlePhalanxOutlineCorrect	0.81	0.77	0.43	0.77	0.81	**0.85**
MiddlePhalanxTW	0.10	0.36	0.39	0.39	**0.40**	0.36
MixedShapesRegularTrain	0.02	0.69	0.80	0.94	0.90	**0.95**
MixedShapesSmallTrain	0.02	0.49	0.77	0.85	0.85	**0.90**
MoteStrain	**0.93**	0.63	0.80	0.81	0.90	**0.93**
NonInvasiveFetalECGThorax1	0.00	0.60	0.87	**0.91**	0.89	**0.91**
NonInvasiveFetalECGThorax2	0.00	0.66	0.90	0.92	0.87	**0.94**
OSULeaf	0.02	0.31	0.38	0.85	**0.95**	0.72
OliveOil	0.05	0.56	0.14	**0.86**	0.22	0.83
PLAID	0.01	0.74	0.29	0.06	0.01	**0.87**
PhalangesOutlinesCorrect	0.79	0.07	0.50	0.81	0.77	**0.87**
Phoneme	0.00	**0.34**	0.04	0.11	0.13	0.12
PickupGestureWiimoteZ	0.02	0.05	0.47	0.40	0.44	**0.77**
PigAirwayPressure	0.00	**0.21**	0.03	0.20	0.05	0.17
PigArtPressure	0.00	0.17	0.02	**0.74**	0.11	0.58
PigCVP	0.00	0.22	0.05	0.23	0.07	**0.59**
Plane	0.07	0.86	0.96	0.99	**1.00**	**1.00**
PowerCons	0.93	0.62	0.93	**0.98**	0.92	0.97
ProximalPhalanxOutlineAgeGroup	0.14	0.68	0.59	0.76	**0.77**	0.68
ProximalPhalanxOutlineCorrect	0.89	0.79	0.68	0.89	0.89	**0.92**
ProximalPhalanxTW	0.09	0.56	0.33	0.49	**0.57**	0.50
RefrigerationDevices	0.12	0.33	0.36	0.51	**0.53**	0.51
Rock	0.04	0.41	0.81	0.44	0.36	**0.89**
ScreenType	0.23	0.33	0.37	0.47	**0.62**	0.43
SemgHandGenderCh2	0.33	0.33	0.77	0.78	0.67	**0.89**
SemgHandMovementCh2	0.03	0.22	0.42	0.37	0.34	**0.56**
SemgHandSubjectCh2	0.06	0.47	0.77	0.46	0.43	**0.89**
ShakeGestureWiimoteZ	0.02	0.44	0.51	0.73	0.80	**0.83**
ShapeletSim	0.63	0.50	0.50	0.50	0.76	**0.89**
ShapesAll	0.00	0.44	0.53	**0.86**	0.74	0.85
SmallKitchenAppliances	0.15	0.39	0.39	0.74	**0.81**	**0.81**
SmoothSubspace	0.14	0.62	0.58	0.98	**1.00**	0.96
SonyAIBORobotSurface1	0.71	0.56	0.52	0.63	**0.90**	0.80
SonyAIBORobotSurface2	0.84	0.73	0.79	0.80	**0.97**	0.90
StarLightCurves	0.01	0.93	0.85	0.94	0.78	**0.97**
Strawberry	0.95	0.82	0.82	0.96	0.95	**0.98**
SwedishLeaf	0.00	0.70	0.73	0.94	**0.96**	**0.96**
Symbols	0.07	0.51	0.76	0.90	0.73	**0.96**
SyntheticControl	0.05	0.88	0.79	0.99	**1.00**	0.99
ToeSegmentation1	0.82	0.49	0.56	**0.95**	0.89	0.91
ToeSegmentation2	0.66	0.20	0.48	**0.78**	0.77	0.73
Trace	0.18	0.92	0.48	**1.00**	0.99	**1.00**
TwoLeadECG	0.88	0.63	0.56	0.86	**1.00**	0.99
TwoPatterns	0.03	**1.00**	0.82	**1.00**	0.92	**1.00**
UMD	0.03	0.43	0.71	0.86	0.50	**0.99**
UWaveGestureLibraryAll	0.04	0.82	0.85	0.91	0.79	**0.97**
UWaveGestureLibraryX	0.01	0.64	0.60	**0.79**	0.76	**0.79**
UWaveGestureLibraryY	0.02	0.54	0.58	0.68	0.62	**0.72**
UWaveGestureLibraryZ	0.01	0.59	0.53	0.70	**0.72**	**0.72**
Wafer	0.99	0.97	0.80	0.99	0.99	**1.00**

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Dataset	FROCKS (K=10000)	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
Wine	0.69	0.44	0.44	0.42	0.48	**0.94**
WordSynonyms	0.02	0.33	0.21	0.38	0.18	**0.58**
Worms	0.06	0.51	0.27	0.61	0.59	**0.72**
WormsTwoClass	**0.77**	0.49	0.52	0.72	0.75	0.64
Yoga	0.80	0.70	0.62	0.74	0.72	**0.90**

1.2 Non-IID

Table 3: Comparison between Fed2RC (with $K = 10,000$) and the competitors in terms of accuracy on the UCR archive datasets under a non-IID setting (Dirichlet distribution with $\beta = 0.5$). Results are obtained with five averaged runs.

Dataset	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ACSF1	0.69	0.38	0.77	0.81	**0.88**
Adiac	0.56	0.24	0.73	0.52	**0.79**
AllGestureWiimoteX	**0.70**	0.29	0.56	0.50	0.65
AllGestureWiimoteY	**0.67**	0.33	0.63	0.61	**0.67**
AllGestureWiimoteZ	**0.76**	0.26	0.56	0.55	0.64
ArrowHead	**0.91**	0.64	0.75	0.59	0.90
BME	0.94	0.66	0.87	0.48	**0.95**
Beef	**1.00**	0.58	0.78	0.45	0.71
CBF	**1.00**	0.75	0.76	0.89	0.95
Car	**0.99**	0.74	0.76	0.69	0.91
ChlorineConcentration	0.97	0.56	0.84	0.72	**0.99**
CinCECGTorso	0.81	0.41	0.54	0.57	**0.90**
CricketX	0.72	0.31	0.64	0.72	**0.99**
CricketY	**0.92**	0.39	0.57	0.72	0.73
CricketZ	**0.95**	0.29	0.64	0.75	0.86
Crop	0.93	0.58	0.77	0.75	**1.00**
DiatomSizeReduction	0.58	0.82	**0.96**	0.67	0.75
DistalPhalanxOutlineAgeGroup	0.73	0.63	0.74	0.73	**0.76**
DistalPhalanxTW	0.52	0.59	0.61	0.67	**0.76**
DodgerLoopDay	**0.82**	0.42	0.34	0.36	0.77
ECG5000	0.52	**0.94**	**0.94**	**0.94**	0.70
EOGHorizontalSignal	0.31	0.30	0.57	0.26	**0.97**
EOGVerticalSignal	0.35	0.34	0.46	0.16	**0.67**
ElectricDevices	**0.82**	0.47	0.69	0.72	0.77
EthanolLevel	0.46	0.44	**0.66**	0.33	**0.66**
FaceAll	0.71	0.72	0.90	**0.91**	0.64
FaceFour	0.65	0.83	0.70	0.78	**0.90**
FacesUCR	**1.00**	0.69	0.88	0.88	0.99
FiftyWords	0.28	0.51	0.69	0.48	**0.88**
Fish	0.31	0.73	**0.93**	0.91	**0.93**
Fungi	0.06	0.20	0.56	0.41	**1.00**
GestureMidAirD1	**0.72**	0.46	0.54	0.50	0.55
GestureMidAirD2	0.18	0.45	**0.48**	0.40	**0.48**
GestureMidAirD3	0.62	0.26	0.27	0.10	**0.74**
GesturePebbleZ1	0.24	0.72	0.75	**0.78**	0.76
GesturePebbleZ2	0.72	0.56	0.76	**0.77**	0.53
Haptics	0.70	0.46	0.40	0.43	**0.78**
InlineSkate	0.57	0.25	0.27	0.22	**0.96**
InsectEPGRegularTrain	0.91	0.83	0.93	**0.97**	0.95
InsectEPGSmallTrain	**0.92**	0.83	0.89	0.90	0.79
InsectWingbeatSound	0.50	0.63	0.58	0.41	**0.94**
LargeKitchenAppliances	0.45	0.37	0.88	0.90	**0.94**
Lightning7	**0.81**	0.64	0.60	0.64	0.80
Mallat	0.68	0.77	0.98	0.75	**1.00**

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Dataset	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
Meat	0.38	0.75	0.73	0.77	**0.91**
MedicalImages	**0.87**	0.55	0.69	0.75	0.04
MelbournePedestrian	0.75	0.76	**0.95**	0.87	0.68
MiddlePhalanxOutlineAgeGroup	**0.74**	0.63	0.56	0.55	0.65
MiddlePhalanxTW	0.57	**0.61**	0.52	0.59	0.35
MixedShapesRegularTrain	0.93	0.79	**0.94**	0.90	0.90
MixedShapesSmallTrain	**0.95**	0.77	0.85	0.85	0.87
NonInvasiveFetalECGThorax1	0.33	0.88	0.92	0.90	**0.99**
NonInvasiveFetalECGThorax2	0.37	0.90	0.92	0.88	**0.98**
OSULeaf	0.71	0.40	0.86	0.95	**1.00**
OliveOil	0.76	0.40	0.88	0.44	**0.98**
PLAID	0.33	0.34	0.13	0.07	**0.68**
Phoneme	0.55	0.08	0.25	0.32	**0.93**
PickupGestureWiimoteZ	**0.62**	0.48	0.43	0.50	0.46
PigAirwayPressure	**0.62**	0.04	0.25	0.12	0.58
PigArtPressure	0.71	0.04	0.76	0.18	**0.95**
PigCVP	**0.67**	0.06	0.26	0.13	0.42
Plane	0.88	0.96	0.99	**1.00**	0.79
ProximalPhalanxOutlineAgeGroup	0.73	**0.85**	0.84	**0.85**	0.73
ProximalPhalanxTW	**0.83**	0.71	0.77	0.79	0.64
RefrigerationDevices	0.26	0.36	0.51	0.54	**0.97**
Rock	0.57	**0.81**	0.48	0.42	0.79
ScreenType	0.50	0.38	0.48	0.62	**0.77**
SemgHandMovementCh2	0.54	0.43	0.37	0.39	**0.74**
SemgHandSubjectCh2	0.94	0.77	0.47	0.46	**0.95**
ShakeGestureWiimoteZ	0.49	0.56	0.74	0.84	**0.97**
ShapeletSim	0.65	0.50	0.56	**0.76**	0.62
ShapesAll	0.60	0.58	**0.87**	0.76	0.85
SmallKitchenAppliances	**0.92**	0.39	0.74	0.81	0.48
SmoothSubspace	0.60	0.62	0.98	**1.00**	0.83
SonyAIBORobotSurface1	0.66	0.57	0.64	**0.90**	0.50
StarLightCurves	0.65	0.89	**0.96**	0.86	0.93
Strawberry	0.65	0.83	**0.97**	0.95	0.90
SwedishLeaf	0.82	0.74	0.94	**0.96**	0.94
Symbols	0.56	0.77	0.90	0.76	**0.92**
SyntheticControl	0.79	0.82	0.99	**1.00**	0.94
Trace	0.99	0.51	**1.00**	0.99	0.72
TwoPatterns	0.47	0.82	**1.00**	0.92	0.89
UMD	**0.98**	0.71	0.86	0.58	0.93
UWaveGestureLibraryAll	0.74	0.85	**0.91**	0.79	0.83
UWaveGestureLibraryX	0.55	0.65	**0.80**	0.77	0.18
UWaveGestureLibraryY	0.62	0.59	0.68	0.63	**0.79**
UWaveGestureLibraryZ	0.60	0.56	0.71	**0.73**	0.18
WordSynonyms	0.28	0.41	0.59	0.40	**0.60**
Worms	0.62	0.31	0.65	**0.68**	0.60

Table 4: Comparison between Fed2RC (with $K = 10,000$) and the competitors in terms of F1-score on the UCR archive datasets under a non-IID setting (Dirichlet distribution with $\beta = 0.5$). Results are obtained with five averaged runs.

Dataset	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ACSF1	0.62	0.34	0.76	0.80	**0.88**
Adiac	0.40	0.18	0.71	0.47	**0.77**
AllGestureWiimoteX	**0.68**	0.29	0.56	0.47	0.64
AllGestureWiimoteY	0.65	0.31	0.63	0.61	**0.66**
AllGestureWiimoteZ	**0.76**	0.25	0.55	0.52	0.63
ArrowHead	**0.90**	0.63	0.75	0.54	**0.90**
BME	0.94	0.65	0.87	0.45	**0.95**

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Dataset	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
Beef	**1.00**	0.55	0.78	0.40	0.70
CBF	**1.00**	0.75	0.74	0.88	0.95
Car	**0.99**	0.75	0.74	0.69	0.91
ChlorineConcentration	0.97	0.31	0.81	0.68	**0.99**
CinCECGTorso	0.79	0.41	0.53	0.57	**0.89**
CricketX	0.60	0.30	0.64	0.72	**0.98**
CricketY	**0.85**	0.38	0.57	0.71	0.69
CricketZ	**0.95**	0.29	0.62	0.73	0.86
Crop	0.93	0.56	0.76	0.74	**1.00**
DiatomSizeReduction	0.54	0.65	**0.95**	0.52	0.75
DistalPhalanxOutlineAgeGroup	0.71	0.45	0.73	0.73	**0.75**
DistalPhalanxTW	0.37	0.27	0.47	0.52	**0.76**
DodgerLoopDay	**0.82**	0.41	0.30	0.28	0.75
ECG5000	0.45	0.59	0.56	0.56	**0.68**
EOGHorizontalSignal	0.24	0.28	0.56	0.22	**0.96**
EOGVerticalSignal	0.28	0.27	0.45	0.10	**0.66**
ElectricDevices	**0.84**	0.35	0.62	0.63	0.75
EthanolLevel	0.38	0.32	**0.62**	0.28	0.50
FaceAll	0.35	0.69	**0.90**	**0.90**	0.61
FaceFour	0.45	0.83	0.69	0.78	**0.90**
FacesUCR	**1.00**	0.63	0.86	0.84	0.98
FiftyWords	0.21	0.32	0.47	0.21	**0.87**
Fish	0.24	0.72	**0.93**	0.91	0.60
Fungi	0.04	0.14	0.55	0.32	**1.00**
GestureMidAirD1	**0.71**	0.44	0.54	0.46	0.53
GestureMidAirD2	0.07	0.41	**0.46**	0.35	0.43
GestureMidAirD3	**0.58**	0.24	0.26	0.07	0.55
GesturePebbleZ1	0.09	0.71	0.72	**0.75**	0.68
GesturePebbleZ2	0.70	0.54	0.73	**0.76**	0.46
Haptics	0.65	0.43	0.39	0.40	**0.83**
InlineSkate	0.50	0.25	0.26	0.18	**0.97**
InsectEPGRegularTrain	0.91	0.60	0.87	0.92	**0.94**
InsectEPGSmallTrain	**0.92**	0.60	0.84	0.77	0.66
InsectWingbeatSound	0.27	0.63	0.58	0.39	**0.93**
LargeKitchenAppliances	0.39	0.37	0.88	0.90	**0.94**
Lightning7	**0.80**	0.56	0.59	0.60	**0.80**
Mallat	0.53	0.71	0.98	0.70	**1.00**
Meat	0.23	0.71	0.72	0.74	**0.91**
MedicalImages	**0.84**	0.41	0.64	0.69	0.00
MelbournePedestrian	0.73	0.74	**0.95**	0.86	0.67
MiddlePhalanxOutlineAgeGroup	**0.73**	0.50	0.49	0.43	0.64
MiddlePhalanxTW	**0.53**	0.39	0.39	0.40	0.31
MixedShapesRegularTrain	0.91	0.80	**0.94**	0.90	0.89
MixedShapesSmallTrain	**0.94**	0.77	0.85	0.85	0.86
NonInvasiveFetalECGThorax1	0.31	0.87	0.91	0.89	**0.99**
NonInvasiveFetalECGThorax2	0.30	0.90	0.92	0.87	**0.98**
OSULeaf	0.69	0.38	0.85	0.95	**1.00**
OliveOil	0.74	0.14	0.86	0.22	**0.98**
PLAID	0.30	0.29	0.06	0.01	**0.67**
Phoneme	0.48	0.04	0.11	0.13	**0.92**
PickupGestureWiimoteZ	**0.60**	0.47	0.40	0.44	0.45
PigAirwayPressure	**0.60**	0.03	0.20	0.05	0.56
PigArtPressure	0.68	0.02	0.74	0.11	**0.95**
PigCVP	**0.49**	0.05	0.23	0.07	0.43
Plane	0.84	0.96	0.99	**1.00**	0.76
ProximalPhalanxOutlineAgeGroup	0.71	0.59	0.76	**0.77**	0.71
ProximalPhalanxTW	**0.81**	0.33	0.49	0.57	0.63
RefrigerationDevices	0.13	0.36	0.51	0.53	**0.97**
Rock	0.42	**0.81**	0.44	0.36	0.79

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Dataset	RocketFL (K=10000)	MLP	ResNet	Inception	Fed2RC (K=10000)
ScreenType	0.47	0.37	0.47	0.62	**0.76**
SemgHandMovementCh2	0.54	0.42	0.37	0.34	**0.73**
SemgHandSubjectCh2	0.57	0.77	0.46	0.43	**0.95**
ShakeGestureWiimoteZ	0.43	0.51	0.73	0.80	**0.97**
ShapeletSim	0.41	0.50	0.50	**0.76**	0.57
ShapesAll	0.52	0.53	**0.86**	0.74	0.84
SmallKitchenAppliances	**0.85**	0.39	0.74	0.81	0.43
SmoothSubspace	0.58	0.58	0.98	**1.00**	0.83
SonyAIBORobotSurface1	0.62	0.52	0.63	**0.90**	0.36
StarLightCurves	0.64	0.85	**0.94**	0.78	0.93
Strawberry	0.63	0.82	**0.96**	0.95	0.90
SwedishLeaf	0.82	0.73	0.94	**0.96**	0.94
Symbols	0.30	0.76	0.90	0.73	**0.91**
SyntheticControl	0.78	0.79	0.99	**1.00**	0.94
Trace	0.99	0.48	**1.00**	0.99	0.72
TwoPatterns	0.44	0.82	**1.00**	0.92	0.86
UMD	**0.98**	0.71	0.86	0.50	0.88
UWaveGestureLibraryAll	0.73	0.85	**0.91**	0.79	0.81
UWaveGestureLibraryX	0.52	0.60	**0.79**	0.76	0.11
UWaveGestureLibraryY	0.61	0.58	0.68	0.62	**0.78**
UWaveGestureLibraryZ	0.59	0.53	0.70	**0.72**	0.17
WordSynonyms	0.21	0.21	0.38	0.18	**0.59**
Worms	0.59	0.27	**0.61**	0.59	0.59

1.3 Effect of Rocket Kernels on Fed2RC under a uniform data distribution

Table 5: Performance in terms of accuracy of Fed2RC on the UCR archive datasets w.r.t. the number of kernels (100, 1 000, and 10 000). Results are obtained with five averaged runs.

Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
ACSF1	0.73	**0.87**	**0.87**
Adiac	0.65	0.77	**0.80**
AllGestureWiimoteX	0.58	**0.66**	**0.66**
AllGestureWiimoteY	0.56	0.64	**0.67**
AllGestureWiimoteZ	0.56	0.63	**0.64**
ArrowHead	0.79	**0.90**	**0.90**
BME	0.87	**0.95**	**0.95**
Beef	0.67	0.70	**0.73**
BeetleFly	0.82	0.92	**0.95**
BirdChicken	**0.97**	0.81	0.89
CBF	0.97	**0.99**	**0.99**
Car	0.79	0.89	**0.90**
Chinatown	0.98	0.98	**0.99**
ChlorineConcentration	0.55	0.64	**0.73**
CinCECGTorso	0.66	0.81	**0.85**
Coffee	0.93	**1.00**	**1.00**
Computers	0.76	**0.78**	0.75
CricketX	0.64	0.75	**0.77**
CricketY	0.63	0.74	**0.76**
CricketZ	0.62	0.76	**0.80**
Crop	0.44	0.66	**0.70**
DiatomSizeReduction	0.88	0.95	**0.97**
DistalPhalanxOutlineAgeGroup	**0.74**	0.68	0.71
DistalPhalanxOutlineCorrect	0.75	**0.77**	0.76
DistalPhalanxTW	**0.68**	**0.68**	0.67
DodgerLoopDay	0.49	0.64	**0.65**
DodgerLoopGame	0.84	**0.90**	0.89

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
DodgerLoopWeekend	0.98	**0.99**	**0.99**
ECG200	0.88	**0.89**	**0.89**
ECG5000	**0.94**	**0.94**	0.93
ECGFiveDays	0.98	**1.00**	**1.00**
EOGHorizontalSignal	0.50	**0.57**	0.56
EOGVerticalSignal	0.43	**0.48**	0.47
Earthquakes	0.75	**0.76**	0.74
ElectricDevices	0.65	0.74	**0.77**
EthanolLevel	0.50	**0.58**	0.52
FaceAll	0.69	0.77	**0.78**
FaceFour	0.80	**0.95**	**0.95**
FacesUCR	0.78	0.92	**0.95**
FiftyWords	0.70	**0.80**	**0.80**
Fish	0.89	**0.95**	0.94
FordA	0.94	**0.95**	0.94
FordB	0.79	**0.81**	0.80
FreezerRegularTrain	**0.99**	**0.99**	**0.99**
FreezerSmallTrain	0.80	0.88	**0.91**
Fungi	**0.04**	**0.04**	**0.04**
GestureMidAirD1	0.56	0.64	**0.68**
GestureMidAirD2	0.57	0.63	**0.65**
GestureMidAirD3	0.32	0.32	**0.35**
GesturePebbleZ1	0.89	0.88	**0.90**
GesturePebbleZ2	**0.87**	0.84	0.86
GunPointAgeSpan	0.98	0.98	**0.99**
GunPointMaleVersusFemale	0.99	**1.00**	**1.00**
GunPointOldVersusYoung	0.98	**0.99**	**0.99**
GunPoint	0.98	0.98	**0.99**
Ham	**0.77**	0.68	0.67
HandOutlines	0.92	**0.93**	**0.93**
Haptics	0.45	**0.50**	0.46
Herring	**0.67**	0.65	0.59
HouseTwenty	0.93	**0.95**	**0.95**
InlineSkate	0.30	0.38	**0.43**
InsectEPGRegularTrain	**0.84**	0.76	0.79
InsectEPGSmallTrain	0.67	**0.73**	0.72
InsectWingbeatSound	0.60	**0.64**	0.61
ItalyPowerDemand	0.95	0.96	**0.97**
LargeKitchenAppliances	**0.84**	0.79	0.78
Lightning2	0.74	0.74	**0.78**
Lightning7	**0.76**	0.75	0.74
Mallat	0.80	0.93	**0.95**
Meat	0.87	0.96	**0.97**
MedicalImages	0.66	**0.72**	0.69
MelbournePedestrian	0.74	0.86	**0.88**
MiddlePhalanxOutlineAgeGroup	**0.59**	0.54	0.51
MiddlePhalanxOutlineCorrect	0.76	**0.82**	**0.82**
MiddlePhalanxTW	**0.56**	0.52	0.51
MixedShapesRegularTrain	0.91	0.94	**0.95**
MixedShapesSmallTrain	0.83	**0.90**	**0.90**
MoteStrain	0.92	**0.94**	0.93
NonInvasiveFetalECGThorax1	0.79	0.90	**0.92**
NonInvasiveFetalECGThorax2	0.83	0.92	**0.95**
OSULeaf	**0.77**	0.74	0.72
OliveOil	0.83	0.87	**0.88**
PLAID	0.75	0.90	**0.92**
PhalangesOutlinesCorrect	0.76	0.82	**0.83**
Phoneme	**0.23**	0.21	0.18
PickupGestureWiimoteZ	0.63	0.77	**0.78**

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
PigAirwayPressure	0.16	**0.17**	**0.17**
PigArtPressure	**0.75**	0.70	0.60
PigCVP	**0.60**	**0.60**	**0.60**
Plane	**1.00**	**1.00**	**1.00**
PowerCons	0.96	**0.98**	0.97
ProximalPhalanxOutlineAgeGroup	**0.86**	0.83	0.75
ProximalPhalanxOutlineCorrect	0.84	**0.89**	**0.89**
ProximalPhalanxTW	**0.80**	0.79	0.77
RefrigerationDevices	**0.52**	0.51	0.51
Rock	0.80	0.84	**0.89**
ScreenType	0.42	**0.44**	0.42
SemgHandGenderCh2	0.85	0.87	**0.93**
SemgHandMovementCh2	0.45	0.54	**0.56**
SemgHandSubjectCh2	0.73	0.84	**0.89**
ShakeGestureWiimoteZ	0.79	0.82	**0.85**
ShapeletSim	0.79	0.73	**0.89**
ShapesAll	0.71	0.84	**0.86**
SmallKitchenAppliances	0.79	**0.81**	**0.81**
SmoothSubspace	0.88	0.94	**0.96**
SonyAIBORobotSurface1	0.77	**0.81**	0.79
SonyAIBORobotSurface2	0.85	0.87	**0.88**
StarLightCurves	0.97	**0.98**	**0.98**
Strawberry	0.95	0.97	**0.98**
SwedishLeaf	0.86	0.95	**0.96**
Symbols	0.86	0.95	**0.96**
SyntheticControl	0.95	0.98	**0.99**
ToeSegmentation1	0.89	0.91	**0.92**
ToeSegmentation2	**0.89**	**0.89**	0.88
Trace	**1.00**	**1.00**	**1.00**
TwoLeadECG	0.92	**0.99**	**0.99**
TwoPatterns	0.85	0.99	**1.00**
UMD	0.93	0.97	**0.99**
UWaveGestureLibraryAll	0.88	0.96	**0.97**
UWaveGestureLibraryX	0.76	0.80	**0.81**
UWaveGestureLibraryY	0.67	**0.73**	**0.73**
UWaveGestureLibraryZ	0.71	**0.76**	0.74
Wafer	0.99	**1.00**	**1.00**
Wine	0.79	0.83	**0.94**
WordSynonyms	0.59	0.69	**0.71**
WormsTwoClass	0.72	**0.73**	0.69
Worms	**0.71**	0.63	0.65
Yoga	0.74	0.87	**0.90**

Table 6: Performance in terms of F1-score of Fed2RC on the UCR archive datasets w.r.t. the number of kernels (100, 1 000, and 10 000). Results are obtained with five averaged runs.

Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
ACSF1	0.71	0.86	**0.87**
Adiac	0.61	0.74	**0.77**
AllGestureWiimoteX	0.58	**0.65**	**0.65**
AllGestureWiimoteY	0.56	0.63	**0.67**
AllGestureWiimoteZ	0.56	0.63	**0.64**
ArrowHead	0.79	**0.90**	**0.90**
BME	0.88	**0.95**	**0.95**
Beef	0.66	0.68	**0.73**
BeetleFly	0.80	0.91	**0.95**
BirdChicken	**0.97**	0.82	0.90

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
CBF	0.97	**0.99**	**0.99**
Car	0.78	**0.89**	**0.89**
Chinatown	0.98	**0.99**	**0.99**
ChlorineConcentration	0.41	0.57	**0.69**
CinCECGTorso	0.67	0.81	**0.85**
Coffee	0.93	**1.00**	**1.00**
Computers	0.77	**0.79**	0.76
CricketX	0.63	0.74	**0.77**
CricketY	0.63	0.74	**0.75**
CricketZ	0.60	0.74	**0.78**
Crop	0.44	0.64	**0.68**
DiatomSizeReduction	0.87	0.94	**0.96**
DistalPhalanxOutlineAgeGroup	**0.75**	0.67	0.69
DistalPhalanxOutlineCorrect	0.80	**0.82**	0.81
DistalPhalanxTW	0.44	0.51	**0.52**
DodgerLoopDay	0.47	**0.63**	**0.63**
DodgerLoopGame	0.83	**0.89**	0.88
DodgerLoopWeekend	**0.97**	**0.97**	**0.97**
ECG200	0.91	**0.92**	**0.92**
ECG5000	0.51	**0.61**	0.57
ECGFiveDays	0.98	**1.00**	**1.00**
EOGHorizontalSignal	0.48	**0.55**	0.54
EOGVerticalSignal	0.39	**0.44**	0.42
Earthquakes	0.03	0.19	**0.21**
ElectricDevices	0.55	**0.68**	**0.68**
EthanolLevel	0.49	**0.54**	0.46
FaceAll	0.72	**0.83**	**0.83**
FaceFour	0.80	0.95	**0.96**
FacesUCR	0.76	0.91	**0.94**
FiftyWords	0.55	**0.68**	0.66
Fish	0.89	**0.94**	**0.94**
FordA	0.93	**0.95**	0.94
FordB	0.80	**0.81**	0.80
FreezerRegularTrain	**0.99**	**0.99**	**0.99**
FreezerSmallTrain	0.81	0.89	**0.91**
Fungi	**0.00**	**0.00**	**0.00**
GestureMidAirD1	0.55	0.64	**0.67**
GestureMidAirD2	0.54	0.61	**0.64**
GestureMidAirD3	0.30	0.28	**0.32**
GesturePebbleZ1	**0.89**	0.88	**0.89**
GesturePebbleZ2	**0.86**	0.84	**0.86**
GunPointAgeSpan	0.97	0.98	**0.99**
GunPointMaleVersusFemale	0.99	**1.00**	**1.00**
GunPointOldVersusYoung	0.98	**0.99**	**0.99**
GunPoint	0.98	0.98	**0.99**
Ham	**0.79**	0.71	0.70
HandOutlines	0.94	**0.95**	**0.95**
Haptics	0.42	**0.48**	0.46
Herring	0.53	**0.55**	0.49
HouseTwenty	0.91	**0.94**	**0.94**
InlineSkate	0.30	0.38	**0.43**
InsectEPGRegularTrain	**0.81**	0.73	0.76
InsectEPGSmallTrain	0.57	0.68	**0.70**
InsectWingbeatSound	0.59	**0.62**	0.60
ItalyPowerDemand	0.95	0.96	**0.97**
LargeKitchenAppliances	**0.84**	0.79	0.78
Lightning2	0.77	0.76	**0.80**
Lightning7	0.73	**0.74**	**0.74**
Mallat	0.78	0.93	**0.95**

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
Meat	0.87	0.96	**0.97**
MedicalImages	0.59	**0.67**	0.64
MelbournePedestrian	0.73	0.86	**0.88**
MiddlePhalanxOutlineAgeGroup	**0.49**	0.46	0.45
MiddlePhalanxOutlineCorrect	0.81	**0.85**	**0.85**
MiddlePhalanxTW	**0.41**	0.37	0.36
MixedShapesRegularTrain	0.90	0.94	**0.95**
MixedShapesSmallTrain	0.83	**0.90**	**0.90**
MoteStrain	0.91	**0.93**	**0.93**
NonInvasiveFetalECGThorax1	0.79	0.89	**0.91**
NonInvasiveFetalECGThorax2	0.82	0.91	**0.94**
OSULeaf	**0.76**	0.73	0.72
OliveOil	0.76	0.79	**0.83**
PLAID	0.73	0.85	**0.87**
PhalangesOutlinesCorrect	0.82	0.86	**0.87**
Phoneme	**0.13**	**0.13**	0.12
PickupGestureWiimoteZ	0.62	0.75	**0.77**
PigAirwayPressure	**0.17**	**0.17**	**0.17**
PigArtPressure	**0.74**	0.68	0.58
PigCVP	**0.60**	**0.60**	0.59
Plane	**1.00**	**1.00**	**1.00**
PowerCons	0.96	**0.98**	0.97
ProximalPhalanxOutlineAgeGroup	**0.77**	0.75	0.68
ProximalPhalanxOutlineCorrect	0.89	**0.92**	**0.92**
ProximalPhalanxTW	0.46	**0.54**	0.50
RefrigerationDevices	**0.51**	0.50	**0.51**
Rock	0.78	0.84	**0.89**
ScreenType	0.42	**0.44**	0.43
SemgHandGenderCh2	0.78	0.82	**0.89**
SemgHandMovementCh2	0.45	0.54	**0.56**
SemgHandSubjectCh2	0.72	0.84	**0.89**
ShakeGestureWiimoteZ	0.76	0.78	**0.83**
ShapeletSim	0.81	0.74	**0.89**
ShapesAll	0.69	0.83	**0.85**
SmallKitchenAppliances	0.79	**0.81**	**0.81**
SmoothSubspace	0.88	0.94	**0.96**
SonyAIBORobotSurface1	0.79	**0.81**	0.80
SonyAIBORobotSurface2	0.87	0.89	**0.90**
StarLightCurves	0.96	**0.97**	**0.97**
Strawberry	0.96	0.97	**0.98**
SwedishLeaf	0.85	0.95	**0.96**
Symbols	0.85	0.95	**0.96**
SyntheticControl	0.95	0.98	**0.99**
ToeSegmentation1	0.88	0.90	**0.91**
ToeSegmentation2	**0.75**	0.74	0.73
Trace	**1.00**	**1.00**	**1.00**
TwoLeadECG	0.91	**0.99**	**0.99**
TwoPatterns	0.85	0.99	**1.00**
UMD	0.92	0.97	**0.99**
UWaveGestureLibraryAll	0.88	0.96	**0.97**
UWaveGestureLibraryX	0.74	0.78	**0.79**
UWaveGestureLibraryY	0.65	**0.72**	**0.72**
UWaveGestureLibraryZ	0.69	**0.74**	0.72
Wafer	**1.00**	**1.00**	**1.00**
Wine	0.74	0.80	**0.94**
WordSynonyms	0.45	0.55	**0.58**
WormsTwoClass	0.75	**0.76**	0.72
Worms	**0.68**	0.63	0.64
Yoga	0.77	0.88	**0.90**

1.4 Effect of Rocket Kernels on Fed2RC under a non-IID (Dirichlet) data distribution

Table 7: Performance in terms of accuracy of Fed2RC on the UCR archive datasets w.r.t. the number of kernels (100, 1 000, and 10 000) in a non-IID (Dirichlet distribution with $\beta = 0.5$). Results are obtained with five averaged runs.

Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
ACSF1	0.73	0.87	**0.88**
Adiac	0.66	0.76	**0.79**
AllGestureWiimoteX	0.58	**0.65**	**0.65**
AllGestureWiimoteY	0.55	0.65	**0.67**
AllGestureWiimoteZ	0.56	0.63	**0.64**
ArrowHead	0.82	**0.90**	**0.90**
BME	0.87	0.94	**0.95**
Beef	0.66	0.69	**0.71**
BeetleFly	0.82	**0.95**	**0.95**
BirdChicken	**0.92**	0.89	0.91
CBF	0.97	**0.99**	**0.99**
Car	0.79	0.88	**0.90**
Chinatown	0.98	**0.99**	**0.99**
ChlorineConcentration	0.55	0.65	**0.73**
CinCECGTorso	0.65	0.81	**0.86**
Coffee	0.93	**1.00**	**1.00**
Computers	**0.78**	**0.78**	0.75
CricketX	0.61	0.74	**0.76**
CricketY	0.63	0.74	**0.76**
CricketZ	0.64	0.75	**0.77**
Crop	0.49	0.66	**0.70**
DiatomSizeReduction	0.87	0.94	**0.97**
DistalPhalanxOutlineAgeGroup	**0.74**	0.69	0.67
DistalPhalanxOutlineCorrect	0.76	0.76	**0.77**
DistalPhalanxTW	**0.68**	0.66	0.66
DodgerLoopDay	0.49	0.63	**0.64**
DodgerLoopGame	0.84	0.89	**0.90**
DodgerLoopWeekend	0.98	**0.99**	**0.99**
ECG200	**0.88**	**0.88**	**0.88**
ECG5000	**0.94**	**0.94**	0.93
ECGFiveDays	0.96	**1.00**	**1.00**
EOGHorizontalSignal	0.52	**0.57**	0.55
EOGVerticalSignal	0.43	0.47	**0.48**
Earthquakes	0.76	**0.78**	0.74
ElectricDevices	0.64	0.74	**0.76**
EthanolLevel	0.44	**0.57**	0.53
FaceAll	0.69	0.77	**0.78**
FaceFour	0.78	**0.97**	0.96
FacesUCR	0.78	0.92	**0.95**
FiftyWords	0.71	**0.79**	**0.79**
Fish	0.89	**0.95**	0.94
FordA	0.93	**0.95**	0.94
FordB	0.79	**0.80**	**0.80**
FreezerRegularTrain	0.99	0.99	**1.00**
FreezerSmallTrain	0.79	0.88	**0.91**
Fungi	**0.04**	**0.04**	**0.04**
GestureMidAirD1	0.57	0.64	**0.68**
GestureMidAirD2	0.58	0.62	**0.65**
GestureMidAirD3	0.30	0.32	**0.35**
GesturePebbleZ1	0.88	0.89	**0.90**
GesturePebbleZ2	0.84	0.84	**0.87**
GunPoint	0.98	0.98	**0.99**

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
GunPointAgeSpan	0.97	**0.98**	**0.98**
GunPointMaleVersusFemale	0.99	**1.00**	**1.00**
GunPointOldVersusYoung	**0.98**	**0.98**	**0.98**
Ham	**0.74**	0.68	0.68
HandOutlines	0.91	**0.93**	**0.93**
Haptics	0.44	**0.50**	0.46
Herring	**0.67**	0.64	0.58
HouseTwenty	0.91	**0.95**	**0.95**
InlineSkate	0.31	0.38	**0.42**
InsectEPGRegularTrain	**0.81**	0.75	0.79
InsectEPGSmallTrain	**0.73**	**0.73**	**0.73**
InsectWingbeatSound	0.61	0.63	**0.64**
ItalyPowerDemand	0.95	0.96	**0.97**
LargeKitchenAppliances	**0.83**	0.80	0.79
Lightning2	0.76	0.74	**0.77**
Lightning7	**0.77**	0.73	0.74
Mallat	0.81	0.93	**0.95**
Meat	0.86	0.95	**0.97**
MedicalImages	0.64	**0.72**	0.62
MelbournePedestrian	0.75	**0.86**	0.85
MiddlePhalanxOutlineAgeGroup	**0.59**	0.54	0.48
MiddlePhalanxOutlineCorrect	0.75	**0.83**	**0.83**
MiddlePhalanxTW	**0.56**	0.53	0.50
MixedShapesRegularTrain	0.90	**0.95**	0.93
MixedShapesSmallTrain	0.85	**0.90**	**0.90**
MoteStrain	0.92	**0.94**	**0.94**
NonInvasiveFetalECGThorax1	0.80	0.90	**0.92**
NonInvasiveFetalECGThorax2	0.84	0.92	**0.94**
OSULeaf	**0.80**	0.73	0.72
OliveOil	0.72	0.87	**0.89**
PLAID	0.76	0.90	**0.93**
PhalangesOutlinesCorrect	0.74	0.81	**0.83**
Phoneme	**0.23**	0.20	0.18
PickupGestureWiimoteZ	0.56	0.76	**0.79**
PigAirwayPressure	**0.19**	0.18	0.18
PigArtPressure	**0.82**	0.70	0.60
PigCVP	**0.64**	0.61	0.60
Plane	0.99	**1.00**	**1.00**
PowerCons	0.95	**0.97**	**0.97**
ProximalPhalanxOutlineAgeGroup	**0.86**	0.82	0.83
ProximalPhalanxOutlineCorrect	0.83	0.88	**0.90**
ProximalPhalanxTW	0.79	**0.80**	0.73
RefrigerationDevices	0.50	**0.53**	0.51
Rock	0.80	0.86	**0.88**
ScreenType	**0.44**	0.43	0.41
SemgHandGenderCh2	0.85	0.87	**0.92**
SemgHandMovementCh2	0.46	0.54	**0.55**
SemgHandSubjectCh2	0.73	0.84	**0.88**
ShakeGestureWiimoteZ	0.77	0.83	**0.86**
ShapeletSim	0.79	0.76	**0.90**
ShapesAll	0.70	0.84	**0.86**
SmallKitchenAppliances	0.79	**0.81**	**0.81**
SmoothSubspace	0.83	0.93	**0.97**
SonyAIBORobotSurface1	0.76	0.79	**0.80**
SonyAIBORobotSurface2	0.87	0.87	**0.88**
StarLightCurves	0.97	**0.98**	0.97
Strawberry	0.95	0.97	**0.98**
SwedishLeaf	0.85	0.95	**0.96**
Symbols	0.92	**0.96**	**0.96**

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
SyntheticControl	0.95	0.98	**0.99**
ToeSegmentation1	0.89	**0.92**	**0.92**
ToeSegmentation2	**0.89**	0.88	0.88
Trace	**1.00**	**1.00**	**1.00**
TwoLeadECG	0.89	**0.99**	**0.99**
TwoPatterns	0.86	**1.00**	**1.00**
UMD	0.90	0.97	**0.99**
UWaveGestureLibraryAll	0.88	0.96	**0.97**
UWaveGestureLibraryX	0.77	**0.80**	**0.80**
UWaveGestureLibraryY	0.68	**0.73**	**0.73**
UWaveGestureLibraryZ	0.70	**0.76**	0.73
Wafer	0.99	**1.00**	**1.00**
Wine	0.79	0.85	**0.94**
WordSynonyms	0.58	0.69	**0.71**
Worms	**0.70**	0.62	0.66
WormsTwoClass	**0.75**	**0.75**	0.71
Yoga	0.73	0.86	**0.89**

Table 8: Performance in terms of F1-score of Fed2RC on the UCR archive datasets w.r.t. the number of kernels (100, 1 000, and 10 000) in a non-IID (Dirichlet distribution with $\beta = 0.5$). Results are obtained with five averaged runs.

Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
ACSF1	0.72	0.87	**0.88**
Adiac	0.63	0.73	**0.77**
AllGestureWiimoteX	0.58	**0.65**	0.64
AllGestureWiimoteY	0.55	0.64	**0.66**
AllGestureWiimoteZ	0.56	0.62	**0.63**
ArrowHead	0.82	**0.90**	**0.90**
BME	0.87	0.94	**0.95**
Beef	0.65	0.67	**0.70**
BeetleFly	0.82	**0.95**	**0.95**
BirdChicken	**0.92**	0.89	0.91
CBF	0.97	**0.99**	**0.99**
Car	0.80	0.88	**0.89**
Chinatown	0.97	**0.98**	**0.98**
ChlorineConcentration	0.39	0.58	**0.69**
CinCECGTorso	0.66	0.81	**0.86**
Coffee	0.93	**1.00**	**1.00**
Computers	**0.78**	**0.78**	0.75
CricketX	0.61	0.74	**0.75**
CricketY	0.64	0.74	**0.76**
CricketZ	0.62	0.74	**0.75**
Crop	0.49	0.64	**0.68**
DiatomSizeReduction	0.85	0.93	**0.96**
DistalPhalanxOutlineAgeGroup	**0.75**	0.68	0.66
DistalPhalanxOutlineCorrect	0.74	0.74	**0.75**
DistalPhalanxTW	0.46	0.49	**0.50**
DodgerLoopDay	0.46	**0.61**	**0.61**
DodgerLoopGame	0.84	0.89	**0.90**
DodgerLoopWeekend	0.97	**0.98**	**0.98**
ECG200	**0.87**	**0.87**	**0.87**
ECG5000	0.54	**0.61**	0.60
ECGFiveDays	0.96	**1.00**	**1.00**
EOGHorizontalSignal	0.50	**0.55**	0.53
EOGVerticalSignal	0.39	0.42	**0.43**
Earthquakes	0.46	**0.56**	0.55
ElectricDevices	0.56	0.67	**0.68**

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Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
EthanolLevel	0.43	**0.53**	0.46
FaceAll	0.72	0.82	**0.83**
FaceFour	0.78	**0.97**	**0.97**
FacesUCR	0.77	0.90	**0.94**
FiftyWords	0.57	**0.67**	0.66
Fish	0.89	**0.95**	0.93
FordA	0.93	**0.95**	0.94
FordB	0.79	**0.80**	**0.80**
FreezerRegularTrain	0.99	0.99	**1.00**
FreezerSmallTrain	0.79	0.88	**0.91**
Fungi	**0.00**	**0.00**	**0.00**
GestureMidAirD1	0.56	0.63	**0.67**
GestureMidAirD2	0.54	0.61	**0.64**
GestureMidAirD3	0.27	0.29	**0.31**
GesturePebbleZ1	0.87	0.88	**0.89**
GesturePebbleZ2	0.83	0.84	**0.86**
GunPoint	0.98	0.98	**0.99**
GunPointAgeSpan	0.97	**0.98**	**0.98**
GunPointMaleVersusFemale	0.99	**1.00**	**1.00**
GunPointOldVersusYoung	**0.98**	**0.98**	**0.98**
Ham	**0.74**	0.67	0.67
HandOutlines	0.90	**0.92**	**0.92**
Haptics	0.41	**0.47**	0.45
Herring	0.61	**0.63**	0.56
HouseTwenty	0.91	**0.95**	**0.95**
InlineSkate	0.31	0.38	**0.43**
InsectEPGRegularTrain	0.74	0.71	**0.76**
InsectEPGSmallTrain	0.67	0.68	**0.71**
InsectWingbeatSound	0.59	0.62	**0.63**
ItalyPowerDemand	0.95	0.96	**0.97**
LargeKitchenAppliances	**0.82**	0.80	0.79
Lightning2	0.75	0.74	**0.76**
Lightning7	**0.75**	0.73	0.73
Mallat	0.78	0.93	**0.95**
Meat	0.86	0.95	**0.97**
MedicalImages	0.57	**0.66**	0.57
MelbournePedestrian	0.75	**0.86**	0.84
MiddlePhalanxOutlineAgeGroup	**0.48**	**0.48**	0.43
MiddlePhalanxOutlineCorrect	0.74	0.82	**0.83**
MiddlePhalanxTW	**0.40**	0.39	0.36
MixedShapesRegularTrain	0.90	**0.95**	0.93
MixedShapesSmallTrain	0.84	**0.90**	**0.90**
MoteStrain	0.92	**0.94**	**0.94**
NonInvasiveFetalECGThorax1	0.79	0.89	**0.91**
NonInvasiveFetalECGThorax2	0.84	0.92	**0.94**
OSULeaf	**0.79**	0.72	0.72
OliveOil	0.58	0.79	**0.86**
PLAID	0.73	0.85	**0.88**
PhalangesOutlinesCorrect	0.68	0.78	**0.81**
Phoneme	**0.14**	0.13	0.11
PickupGestureWiimoteZ	0.53	0.74	**0.78**
PigAirwayPressure	**0.20**	0.18	0.17
PigArtPressure	**0.80**	0.68	0.59
PigCVP	**0.63**	0.61	0.59
Plane	0.99	**1.00**	**1.00**
PowerCons	0.95	**0.97**	**0.97**
ProximalPhalanxOutlineAgeGroup	**0.77**	0.74	0.75
ProximalPhalanxOutlineCorrect	0.77	0.85	**0.88**
ProximalPhalanxTW	0.44	**0.54**	0.46

(Continues on next page)

Dataset	Fed2RC (K=100)	Fed2RC (K=1000)	Fed2RC (K=10000)
RefrigerationDevices	0.48	**0.52**	0.51
Rock	0.77	0.86	**0.88**
ScreenType	**0.44**	0.43	0.42
SemgHandGenderCh2	0.84	0.86	**0.91**
SemgHandMovementCh2	0.46	0.54	**0.55**
SemgHandSubjectCh2	0.72	0.84	**0.88**
ShakeGestureWiimoteZ	0.73	0.79	**0.84**
ShapeletSim	0.79	0.76	**0.90**
ShapesAll	0.69	0.83	**0.85**
SmallKitchenAppliances	0.79	**0.81**	**0.81**
SmoothSubspace	0.83	0.93	**0.97**
SonyAIBORobotSurface1	0.75	0.79	**0.80**
SonyAIBORobotSurface2	0.86	0.86	**0.87**
StarLightCurves	0.96	**0.97**	0.96
Strawberry	0.95	**0.97**	**0.97**
SwedishLeaf	0.85	0.95	**0.96**
Symbols	0.92	**0.96**	**0.96**
SyntheticControl	0.95	0.98	**0.99**
ToeSegmentation1	0.89	**0.92**	**0.92**
ToeSegmentation2	**0.83**	**0.83**	**0.83**
Trace	**1.00**	**1.00**	**1.00**
TwoLeadECG	0.89	**0.99**	**0.99**
TwoPatterns	0.86	**1.00**	**1.00**
UMD	0.90	0.97	**0.99**
UWaveGestureLibraryAll	0.88	0.96	**0.97**
UWaveGestureLibraryX	0.74	**0.78**	**0.78**
UWaveGestureLibraryY	0.67	**0.72**	**0.72**
UWaveGestureLibraryZ	0.69	**0.75**	0.72
Wafer	0.97	**0.99**	**0.99**
Wine	0.78	0.85	**0.94**
WordSynonyms	0.45	0.56	**0.58**
Worms	**0.68**	0.61	0.65
WormsTwoClass	**0.74**	**0.74**	0.70
Yoga	0.73	0.86	**0.89**

2 Additional Critical Difference Diagrams

This section shows the critical difference diagrams for binary and multiclass datasets of the UCR archive, under a uniform data distribution. The difference with the critical diagrams shown in the main paper is that these are obtained by picking the best set of Rocket kernels for each dataset.

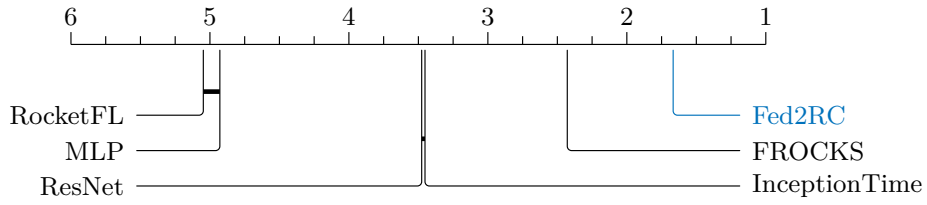

Figure 1. Mean ranks for the competitors and Fed2RC on binary classification tasks, each with best hyperparameters.

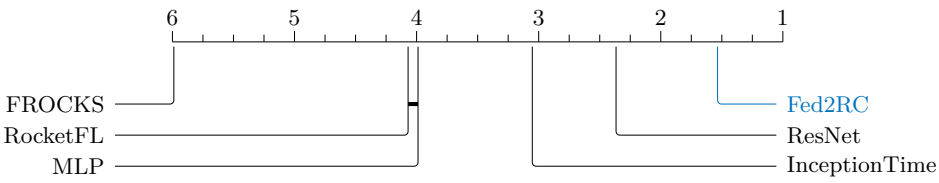

Figure 2. Mean ranks for the competitors and Fed2RC on multiclass classification tasks, each with best hyperparameters.

3 Scalability

We evaluate the Fed2RC capability to scale with the size of the federation using some random datasets from the UCR archive, and by splitting them with an IID setting among an increasing number of federation participants. As a result, each node will hold a smaller portion of data, but more random convolutional transformations will be tested. The optimal number of clients in each federation is dataset-dependent as depicted in Figure 3.

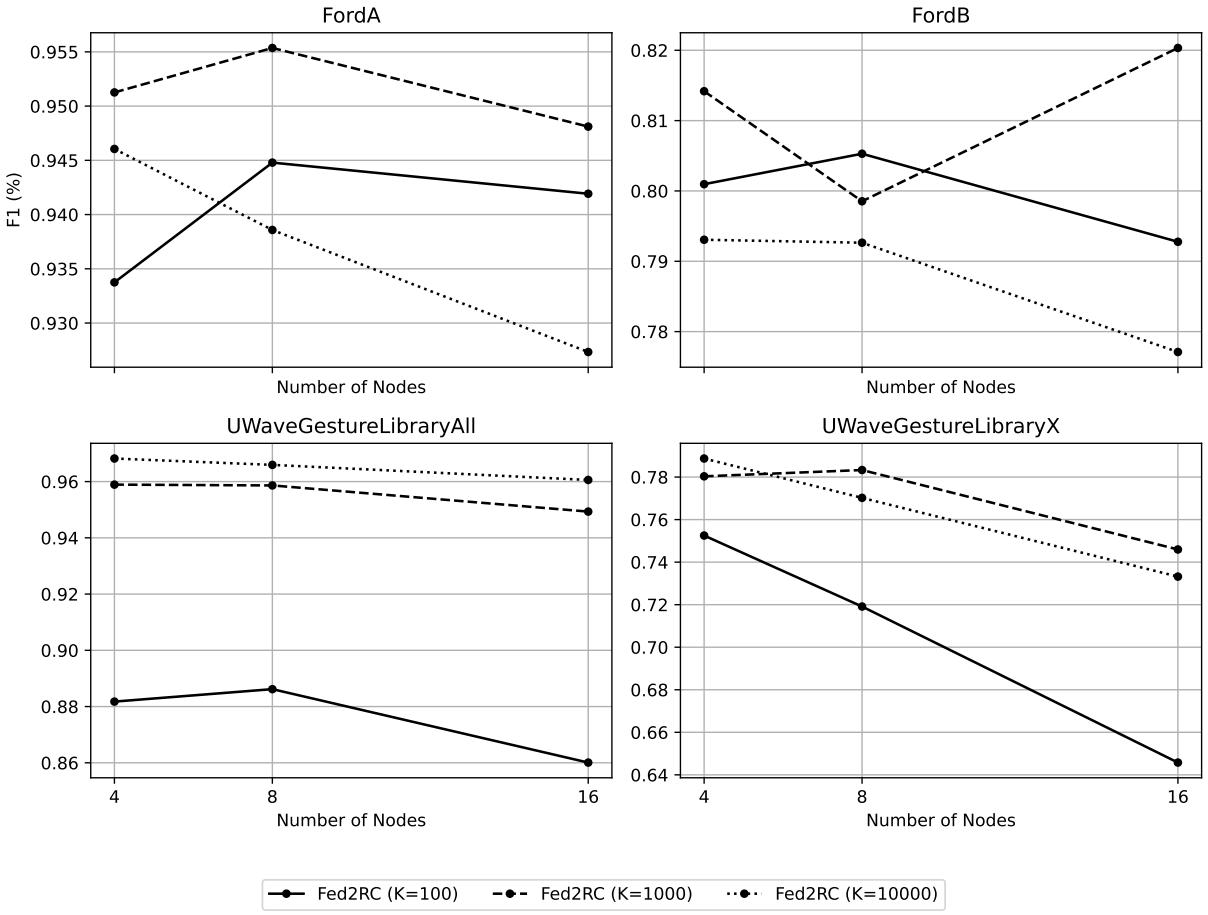

Figure 3. Scalability performance w.r.t. number of nodes of the proposed method.

4 Wall-clock times

Table 9: Wall-clock execution times [MM:SS] to train Fed2RC until convergence, and baseline models on 100 federated training rounds. RocketFL is abbreviated as RFL, and Fed2RC is abbreviated as F2RC. In brackets, the number of Rocket kernels is abbreviated as 1k (one thousand) and 10k (10 thousand). Results are obtained under a non-IID setting.

Dataset	RFL (100)	RFL (1k)	RFL (10k)	MLP	ResNet	Inception	F2RC (100)	F2RC (1k)	F2RC (10k)
ACSF1	00:10	00:11	00:14	00:11	08:01	09:44	00:07	00:48	18:28
Adiac	00:07	00:06	00:08	00:07	03:24	04:01	00:09	00:56	16:30
AllGestureWiimoteX	00:07	00:07	00:08	00:07	03:25	04:02	00:08	00:59	20:09
AllGestureWiimoteY	00:08	00:09	00:13	00:10	03:45	04:05	00:09	01:02	20:15
AllGestureWiimoteZ	00:05	00:06	00:06	00:05	01:01	01:07	00:08	00:58	21:48
ArrowHead	00:18	00:21	00:27	00:21	12:31	14:13	00:07	00:42	17:53
BME	00:16	00:18	00:25	00:19	12:58	14:42	00:06	00:40	15:31
Beef	00:16	00:18	00:25	00:19	12:53	14:23	00:06	00:37	14:42
BeetleFly	00:16	00:18	00:26	00:19	12:43	14:43	00:06	00:37	14:18
BirdChicken	00:17	00:18	00:25	00:20	23:58	36:12	00:06	00:36	15:47
CBF	00:05	00:05	00:06	00:05	00:42	00:51	00:08	00:52	18:56
Car	00:18	00:19	00:26	00:20	10:39	11:55	00:06	00:36	16:45
Chinatown	00:06	00:06	00:07	00:06	00:60	01:09	00:07	00:38	17:18
ChlorineConcentration	00:06	00:06	00:07	00:06	01:21	01:35	00:16	01:57	33:36
CinCECGTorso	00:05	00:05	00:06	00:05	00:51	00:59	00:10	01:18	24:14
Coffee	00:06	00:06	00:06	00:06	01:08	01:17	00:06	00:33	15:12
Computers	00:08	00:09	00:11	00:09	02:54	02:59	00:07	00:43	20:05
CricketX	00:06	00:06	00:07	00:06	02:00	02:38	00:09	00:48	19:49
CricketY	00:10	00:12	00:16	00:12	04:56	05:16	00:08	00:48	19:10
CricketZ	00:10	00:11	00:14	00:11	06:46	06:54	00:09	00:47	19:22
Crop	00:21	00:23	00:33	00:25	41:06	77:60	00:37	06:29	78:31
DiatomSizeReduction	00:06	00:06	00:07	00:06	00:53	01:07	00:07	00:39	17:15
DistalPhalanxOutlineAgeGroup	00:06	00:06	00:06	00:06	00:46	00:56	00:08	00:41	20:03
DistalPhalanxOutlineCorrect	00:06	00:07	00:08	00:07	01:33	01:30	00:09	00:42	20:13
DistalPhalanxTW	00:08	00:09	00:12	00:10	06:18	08:08	00:08	00:40	19:51
DodgerLoopDay	00:11	00:14	00:39	00:19	08:27	10:14	00:06	00:35	17:57
DodgerLoopGame	00:05	00:05	00:06	00:05	00:56	01:07	00:06	00:37	19:03
DodgerLoopWeekend	00:05	00:06	00:06	00:06	01:01	01:13	00:06	00:35	13:12
ECG200	00:10	00:10	00:13	00:11	11:08	15:46	00:06	00:35	18:27
ECG5000	00:09	00:10	00:13	00:10	11:09	16:00	00:16	02:01	31:22
ECGFiveDays	00:08	00:08	00:10	00:09	09:14	13:08	00:07	00:48	17:54
EOGHorizontalSignal	00:08	00:09	00:11	00:10	06:23	08:20	00:08	00:53	19:53
EOGVerticalSignal	00:05	00:05	00:06	00:06	01:33	02:19	00:08	00:53	20:19
Earthquakes	00:08	00:09	00:11	00:10	06:31	08:24	00:07	00:41	19:25
ElectricDevices	00:09	00:09	00:12	00:10	03:55	03:55	00:24	04:01	55:17
EthanolLevel	00:10	00:11	00:13	00:11	05:30	05:27	00:11	01:15	23:12
FaceAll	00:08	00:09	00:11	00:09	03:47	03:51	00:11	01:12	21:57
FaceFour	00:07	00:07	00:08	00:07	02:11	02:17	00:06	00:36	16:24
FacesUCR	00:06	00:06	00:07	00:06	01:22	01:30	00:10	01:13	22:24
FiftyWords	00:07	00:07	00:12	00:08	04:29	06:24	00:08	00:49	18:10
Fish	00:06	00:07	00:12	00:08	04:29	06:21	00:07	00:40	18:05
FordA	00:06	00:12	00:12	00:09	04:26	06:39	00:17	02:12	30:27
FordB	00:05	00:06	00:06	00:06	01:01	01:11	00:16	01:60	29:12
FreezerRegularTrain	00:09	00:10	00:17	00:11	10:18	19:18	00:11	01:27	23:02
FreezerSmallTrain	00:21	00:23	00:32	00:24	15:44	16:08	00:11	01:29	23:31
Fungi	00:11	00:11	00:16	00:12	12:36	18:02	00:06	00:36	14:46
GestureMidAirD1	00:05	00:05	00:06	00:05	00:49	00:58	00:07	00:39	15:21
GestureMidAirD2	00:07	00:07	00:09	00:07	03:03	03:30	00:06	00:39	16:05
GestureMidAirD3	00:25	00:31	01:18	00:41	29:13	39:54	00:07	00:40	17:57
GesturePebbleZ1	00:24	00:29	01:18	00:40	28:41	39:54	00:07	00:38	14:56
GesturePebbleZ2	00:06	00:13	00:07	00:08	00:60	01:16	00:07	00:38	15:31
GunPoint	00:07	00:08	00:11	00:09	09:17	17:10	00:06	00:37	14:56
GunPointAgeSpan	00:11	00:12	00:16	00:13	14:44	26:39	00:07	00:39	16:47
GunPointMaleVersusFemale	00:09	00:10	00:12	00:10	03:43	04:02	00:07	00:40	17:25
GunPointOldVersusYoung	00:10	00:12	00:13	00:11	05:24	05:31	00:07	00:40	17:14
Ham	00:09	00:09	00:11	00:09	03:42	03:58	00:06	00:36	18:26
HandOutlines	00:18	00:20	00:31	00:22	10:18	09:48	00:17	02:06	30:13
Haptics	00:09	00:09	00:13	00:10	03:52	04:11	00:10	00:47	19:54
Herring	00:05	00:06	00:06	00:05	01:08	01:18	00:07	00:35	18:36
HouseTwenty	00:07	00:09	00:09	00:08	08:46	19:24	00:07	00:39	18:17
InlineSkate	00:06	00:06	00:07	00:06	01:14	01:24	00:09	00:56	19:46
InsectEPGRegularTrain	00:05	00:06	00:06	00:06	01:17	01:34	00:08	00:39	17:33
InsectEPGSmallTrain	00:08	00:09	00:11	00:09	06:20	08:26	00:07	00:39	19:60
InsectWingbeatSound	00:06	00:07	00:07	00:06	01:05	01:08	00:10	01:15	23:47
ItalyPowerDemand	00:09	00:09	00:12	00:10	04:05	05:16	00:08	00:54	21:44
LargeKitchenAppliances	00:05	00:05	00:06	00:05	01:09	02:05	00:08	00:48	17:58
Lightning2	00:06	00:06	00:06	00:06	01:42	02:35	00:06	00:35	17:11
Lightning7	00:06	00:06	00:08	00:07	05:41	10:04	00:06	00:35	18:43
Mallat	00:05	00:05	00:06	00:05	02:17	03:35	00:13	01:44	29:50
Meat	00:05	00:06	00:06	00:05	01:14	01:30	00:06	00:34	14:44
MedicalImages	00:07	00:07	00:08	00:07	03:58	05:40	00:08	00:49	18:17
MelbournePedestrian	00:14	00:16	00:28	00:18	37:00	51:31	00:13	01:27	25:54
MiddlePhalanxOutlineAgeGroup	00:06	00:06	00:07	00:06	01:50	02:04	00:08	00:41	20:13
MiddlePhalanxOutlineCorrect	00:06	00:06	00:08	00:07	01:51	02:25	00:09	00:44	20:09
MiddlePhalanxTW	00:06	00:07	00:08	00:07	01:50	02:06	00:08	00:41	20:21
MixedShapesRegularTrain	00:06	00:07	00:08	00:07	01:46	02:01	00:19	01:50	27:49
MixedShapesSmallTrain	00:06	00:06	00:07	00:06	01:04	01:06	00:13	01:35	25:49
MoteStrain	00:06	00:07	00:08	00:07	02:20	02:42	00:09	00:56	21:42
NonInvasiveFetalECGThorax1	00:06	00:06	00:08	00:06	02:11	02:22	00:18	02:08	32:40
NonInvasiveFetalECGThorax2	00:07	00:08	00:11	00:08	02:53	04:39	00:18	02:10	33:08
OSULeaf	00:07	00:08	00:11	00:08	02:51	03:17	00:07	00:39	16:32
OliveOil	00:07	00:08	00:11	00:08	02:50	03:07	00:07	00:35	15:16

(Continues on next page)

Dataset	RFL (100K)	RFL (1k)	RFL (10k)	MLP	ResNet	Inception	F2RC (100K)	F2RC (1k)	F2RC (10k)
PLAID	00:05	00:06	00:06	00:05	00:47	00:54	00:13	01:13	24:55
PhalangesOutlinesCorrect	00:07	00:08	00:10	00:08	03:17	04:50	00:13	01:06	21:56
Phoneme	00:08	00:09	00:11	00:09	04:28	06:23	00:13	01:39	32:30
PickupGestureWiimoteZ	00:39	00:41	00:59	00:45	45:03	47:59	00:06	00:34	12:34
PigAirwayPressure	00:37	00:41	00:59	00:44	44:42	47:41	00:07	00:48	23:35
PigArtPressure	00:07	00:07	00:08	00:07	02:45	03:00	00:08	00:47	21:06
PigCVP	00:10	00:11	00:27	00:14	05:13	05:27	00:08	00:46	21:43
Plane	00:09	00:10	00:12	00:10	03:09	03:43	00:06	00:34	13:25
PowerCons	00:05	00:05	00:06	00:05	00:42	00:54	00:07	00:38	17:09
ProximalPhalanxOutlineAgeGroup	00:11	00:13	00:19	00:14	06:05	06:29	00:09	00:42	20:02
ProximalPhalanxOutlineCorrect	00:10	00:11	00:13	00:11	14:09	20:08	00:10	00:43	19:52
ProximalPhalanxTW	01:33	01:46	02:45	01:56	75:48	79:52	00:08	00:41	19:16
RefrigerationDevices	00:08	00:08	00:10	00:08	04:18	05:02	00:08	00:49	20:44
Rock	00:09	00:10	00:12	00:10	08:23	11:28	00:06	00:37	17:05
ScreenType	00:09	00:10	00:12	00:10	08:25	11:45	00:09	00:49	20:16
SemgHandGenderCh2	00:06	00:06	00:07	00:06	00:58	01:19	00:10	01:05	24:06
SemgHandMovementCh2	00:12	00:14	00:20	00:15	06:49	08:18	00:10	01:09	24:53
SemgHandSubjectCh2	00:06	00:06	00:06	00:06	01:10	01:19	00:10	01:08	25:01
ShakeGestureWiimoteZ	00:05	00:05	00:06	00:05	00:46	00:53	00:06	00:34	16:13
ShapeletSim	00:05	00:05	00:06	00:05	00:43	00:56	00:07	00:36	15:19
ShapesAll	00:06	00:06	00:07	00:06	01:25	01:33	00:09	00:52	15:17
SmallKitchenAppliances	00:09	00:09	00:11	00:09	03:44	03:58	00:08	00:46	16:20
SmoothSubspace	00:10	00:11	00:14	00:11	05:23	05:34	00:06	00:37	19:11
SonyAIBORobotSurface1	00:10	00:09	00:11	00:09	03:46	03:57	00:07	00:42	18:29
SonyAIBORobotSurface2	00:05	00:05	00:06	00:05	01:02	01:17	00:08	00:48	18:22
StarLightCurves	01:27	01:44	03:18	02:00	60:31	59:48	00:33	04:40	56:56
Strawberry	00:09	00:10	00:13	00:10	04:55	05:16	00:09	00:45	18:47
SwedishLeaf	00:09	00:10	00:13	00:10	04:55	05:27	00:09	00:49	19:03
Symbols	00:09	00:10	00:13	00:10	04:58	05:17	00:08	00:51	18:47
SyntheticControl	00:07	00:07	00:09	00:07	04:21	05:47	00:07	00:41	18:58
ToeSegmentation1	00:05	00:05	00:06	00:05	00:40	00:47	00:07	00:37	16:16
ToeSegmentation2	00:07	00:07	00:08	00:07	07:60	18:49	00:06	00:36	15:04
Trace	00:12	00:14	00:17	00:14	06:42	08:12	00:06	00:33	13:04
TwoLeadECG	00:05	00:05	00:06	00:05	00:39	00:44	00:08	00:51	19:14
TwoPatterns	00:05	00:06	00:06	00:06	01:08	01:29	00:17	01:54	29:27
UMD	00:06	00:06	00:07	00:06	01:01	01:20	00:07	00:35	16:26
UWaveGestureLibraryAll	00:05	00:05	00:06	00:05	00:44	00:53	00:20	02:26	33:51
UWaveGestureLibraryX	00:05	00:05	00:06	00:05	00:42	00:49	00:17	01:54	28:19
UWaveGestureLibraryY	00:05	00:05	00:06	00:05	00:45	00:53	00:17	01:58	29:28
UWaveGestureLibraryZ	00:05	00:05	00:06	00:05	00:40	00:51	00:17	01:55	28:48
Wafer	00:04	00:05	00:06	00:05	00:47	01:01	00:21	02:29	35:08
Wine	00:08	00:09	00:12	00:09	05:10	06:01	00:06	00:34	16:01
WordSynonyms	00:08	00:09	00:12	00:09	05:04	06:10	00:08	00:46	18:13
Worms	00:08	00:09	00:12	00:09	05:07	06:03	00:07	00:38	17:37
WormsTwoClass	00:09	00:10	00:17	00:11	04:11	04:33	00:07	00:38	17:29
Yoga	00:09	00:06	00:07	00:07	02:39	03:53	00:13	01:39	27:59

5 Convergence rounds of Fed2RC

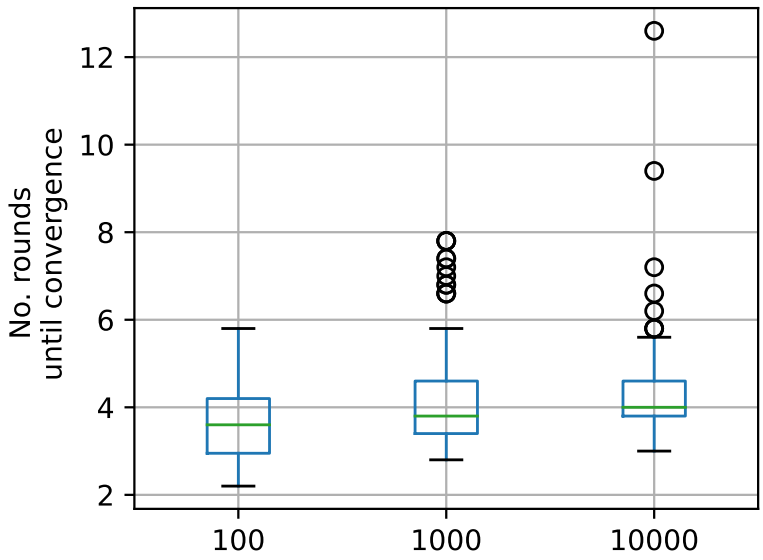

Figure 4. Number of rounds until convergence of Fed2RC shown over all datasets. The x-axis indicates the number of kernels used to initialize.

6 Communication cost

Table 10: Communication cost per round and in total for Fed2RC according to different number of kernels. The values reported are the average over the seeds. The communication cost per round is first averaged over the rounds, since for different rounds Fed2RC has different communication costs. Results are obtained under a non-IID setting.

Dataset	100		1k		10k	
	round	total	round	total	round	total
ACSF1	1.30 KB	145.44 KB	13.16 KB	12.78 MB	132.52 KB	1.28 GB
Adiac	1.25 KB	166.38 KB	12.77 KB	11.71 MB	127.68 KB	1.11 GB
AllGestureWiimoteX	1.06 KB	30.56 KB	10.43 KB	2.01 MB	104.18 KB	191.80 MB
AllGestureWiimoteY	1.06 KB	30.56 KB	10.43 KB	2.01 MB	104.18 KB	191.80 MB
AllGestureWiimoteZ	1.06 KB	30.56 KB	10.43 KB	2.01 MB	104.18 KB	191.80 MB
ArrowHead	1.21 KB	98.00 KB	12.18 KB	9.51 MB	122.35 KB	953.18 MB
BME	1.20 KB	92.05 KB	11.83 KB	7.99 MB	118.21 KB	797.71 MB
Beef	1.18 KB	86.70 KB	12.01 KB	8.82 MB	120.00 KB	865.97 MB
CBF	1.20 KB	87.57 KB	11.90 KB	8.29 MB	120.01 KB	865.47 MB
Car	1.25 KB	115.02 KB	12.47 KB	10.51 MB	125.55 KB	1.04 GB
ChlorineConcentration	1.37 KB	153.47 KB	13.17 KB	12.78 MB	131.33 KB	1.23 GB
CinCECGTorso	1.27 KB	128.91 KB	12.64 KB	11.31 MB	128.41 KB	1.16 GB
CricketX	1.31 KB	147.83 KB	12.81 KB	11.48 MB	127.51 KB	1.08 GB
CricketY	1.30 KB	137.49 KB	12.69 KB	11.33 MB	126.69 KB	1.05 GB
CricketZ	1.31 KB	146.17 KB	12.78 KB	11.41 MB	127.08 KB	1.07 GB
Crop	1.23 KB	124.84 KB	13.18 KB	11.57 MB	133.72 KB	1.15 GB
DiatomSizeReduction	900.27 B	60.93 KB	8.56 KB	4.91 MB	86.86 KB	512.99 MB
DistalPhalanxOutlineAgeGroup	1.32 KB	138.33 KB	12.89 KB	11.48 MB	127.44 KB	1.09 GB
DistalPhalanxTW	1.30 KB	137.19 KB	12.86 KB	11.47 MB	127.63 KB	1.09 GB
DodgerLoopDay	1.22 KB	101.79 KB	12.67 KB	11.55 MB	127.64 KB	1.15 GB
ECG5000	1.27 KB	118.81 KB	12.73 KB	10.90 MB	125.95 KB	1.01 GB
EOGHorizontalSignal	1.28 KB	139.30 KB	12.58 KB	11.03 MB	125.88 KB	1.02 GB
EOGVerticalSignal	1.28 KB	134.98 KB	12.59 KB	10.51 MB	125.43 KB	1.00 GB
ElectricDevices	1.17 KB	79.54 KB	12.64 KB	9.75 MB	133.90 KB	1.16 GB
EthanolLevel	1.31 KB	129.43 KB	12.77 KB	10.95 MB	126.81 KB	1.07 GB
FaceAll	1.28 KB	132.36 KB	12.76 KB	10.99 MB	125.79 KB	1019.51 MB
FaceFour	1.16 KB	93.91 KB	11.40 KB	7.97 MB	114.55 KB	807.97 MB
FacesUCR	1.29 KB	143.72 KB	12.40 KB	10.26 MB	123.24 KB	974.30 MB
FiftyWords	1.28 KB	205.74 KB	12.55 KB	11.04 MB	123.01 KB	954.10 MB
Fish	1.31 KB	145.81 KB	12.54 KB	10.56 MB	125.76 KB	1.03 GB
Fungi	1.23 KB	135.03 KB	12.08 KB	9.34 MB	120.36 KB	887.80 MB
GestureMidAirD1	1.14 KB	88.78 KB	10.19 KB	3.75 MB	109.51 KB	590.30 MB
GestureMidAirD2	1.11 KB	77.35 KB	10.31 KB	4.49 MB	107.28 KB	526.47 MB
GestureMidAirD3	1.19 KB	115.94 KB	10.54 KB	3.97 MB	118.99 KB	784.53 MB
GesturePebbleZ1	1.14 KB	64.51 KB	9.96 KB	3.52 MB	108.64 KB	561.18 MB
GesturePebbleZ2	1.15 KB	72.54 KB	10.29 KB	3.50 MB	115.01 KB	692.69 MB
Haptics	1.26 KB	125.98 KB	12.43 KB	10.33 MB	124.38 KB	1003.99 MB

(Continues on next page)

Dataset	100		1k		10k	
InlineSkate	1.23 KB	114.15 KB	12.31 KB	9.86 MB	122.74 KB	946.23 MB
InsectEPGRegularTrain	1.26 KB	124.32 KB	12.50 KB	10.52 MB	125.92 KB	1.05 GB
InsectEPGSmallTrain	701.87 B	47.89 KB	6.90 KB	4.43 MB	68.71 KB	438.55 MB
InsectWingbeatSound	1.24 KB	114.24 KB	12.58 KB	10.56 MB	126.87 KB	1.06 GB
LargeKitchenAppliances	1.30 KB	121.59 KB	12.48 KB	10.25 MB	125.28 KB	1.01 GB
Lightning7	1.23 KB	110.95 KB	12.76 KB	11.75 MB	128.30 KB	1.16 GB
Mallat	1.23 KB	112.52 KB	12.41 KB	10.14 MB	124.32 KB	1.02 GB
Meat	1.22 KB	102.47 KB	12.33 KB	9.83 MB	123.76 KB	1005.91 MB
MedicalImages	1.34 KB	157.83 KB	13.16 KB	12.64 MB	130.40 KB	1.17 GB
MelbournePedestrian	1.30 KB	131.01 KB	13.16 KB	11.92 MB	130.64 KB	1.14 GB
MiddlePhalanxOutlineAgeGroup	1.33 KB	136.18 KB	13.20 KB	12.61 MB	130.19 KB	1.17 GB
MiddlePhalanxTW	1.33 KB	148.85 KB	13.03 KB	12.58 MB	129.52 KB	1.17 GB
MixedShapesRegularTrain	1.27 KB	120.24 KB	12.46 KB	9.74 MB	122.98 KB	940.05 MB
MixedShapesSmallTrain	1.24 KB	111.84 KB	12.18 KB	9.36 MB	122.06 KB	939.98 MB
NonInvasiveFetalECGThorax1	1.31 KB	192.77 KB	13.03 KB	12.51 MB	128.08 KB	1.08 GB
NonInvasiveFetalECGThorax2	1.28 KB	176.08 KB	13.07 KB	12.44 MB	127.88 KB	1.08 GB
OSULeaf	1.29 KB	120.06 KB	12.59 KB	10.45 MB	124.71 KB	1005.18 MB
OliveOil	1.01 KB	84.05 KB	9.82 KB	6.69 MB	100.96 KB	723.71 MB
PLAID	1.12 KB	66.24 KB	9.79 KB	2.85 MB	99.31 KB	336.39 MB
Phoneme	1.33 KB	234.12 KB	13.38 KB	14.65 MB	134.05 KB	1.40 GB
PickupGestureWiimoteZ	1.11 KB	60.71 KB	9.96 KB	3.04 MB	116.76 KB	734.84 MB
PigAirwayPressure	1.29 KB	245.84 KB	13.10 KB	14.50 MB	131.52 KB	1.34 GB
PigArtPressure	1.27 KB	218.30 KB	12.86 KB	13.11 MB	130.55 KB	1.23 GB
PigCVP	1.27 KB	218.44 KB	12.83 KB	12.86 MB	130.07 KB	1.23 GB
Plane	1.23 KB	93.96 KB	12.14 KB	9.10 MB	120.82 KB	885.41 MB
ProximalPhalanxOutlineAgeGroup	1.31 KB	130.07 KB	12.94 KB	11.80 MB	129.18 KB	1.14 GB
ProximalPhalanxTW	1.32 KB	155.25 KB	12.91 KB	11.72 MB	128.66 KB	1.12 GB
RefrigerationDevices	1.31 KB	131.63 KB	13.08 KB	12.21 MB	130.27 KB	1.17 GB
Rock	1.15 KB	89.39 KB	11.62 KB	8.70 MB	116.98 KB	914.38 MB
ScreenType	1.36 KB	148.81 KB	12.88 KB	11.64 MB	129.94 KB	1.17 GB
SemgHandMovementCh2	1.37 KB	162.74 KB	12.92 KB	12.12 MB	131.42 KB	1.24 GB
SemgHandSubjectCh2	1.32 KB	144.25 KB	13.11 KB	12.48 MB	130.25 KB	1.23 GB
ShakeGestureWiimoteZ	1.13 KB	66.53 KB	9.69 KB	2.71 MB	101.13 KB	373.67 MB
ShapeletSim	1.31 KB	112.48 KB	13.12 KB	9.21 MB	58.67 B	320.00 B
ShapesAll	1.16 KB	145.40 KB	11.80 KB	8.28 MB	115.81 KB	701.57 MB
SmallKitchenAppliances	1.29 KB	120.08 KB	12.33 KB	9.53 MB	125.37 KB	1008.91 MB
SmoothSubspace	1.32 KB	136.17 KB	13.09 KB	12.39 MB	132.04 KB	1.25 GB
SonyAIBORobotSurface1	1.31 KB	112.48 KB	13.12 KB	9.21 MB	123.20 KB	956.83 MB
StarLightCurves	1.29 KB	118.48 KB	12.86 KB	10.15 MB	128.76 KB	1.08 GB
Strawberry	1.25 KB	129.22 KB	12.50 KB	11.06 MB	128.21 KB	1.10 GB
SwedishLeaf	1.35 KB	164.94 KB	12.94 KB	12.16 MB	128.04 KB	1.10 GB
Symbols	1.23 KB	123.63 KB	12.07 KB	10.38 MB	125.50 KB	1.03 GB
SyntheticControl	1.28 KB	120.13 KB	13.01 KB	11.86 MB	130.15 KB	1.16 GB
Trace	1.22 KB	95.37 KB	11.88 KB	8.03 MB	117.48 KB	756.50 MB
TwoPatterns	1.28 KB	113.71 KB	13.00 KB	10.73 MB	126.36 KB	1.01 GB
UMD	1.20 KB	93.42 KB	12.21 KB	9.56 MB	123.55 KB	1014.88 MB
UWaveGestureLibraryAll	1.25 KB	111.38 KB	12.69 KB	10.69 MB	124.76 KB	992.98 MB
UWaveGestureLibraryX	1.28 KB	125.77 KB	12.83 KB	11.16 MB	124.64 KB	984.56 MB
UWaveGestureLibraryY	1.29 KB	129.53 KB	13.09 KB	12.31 MB	126.69 KB	1.05 GB
UWaveGestureLibraryZ	1.28 KB	121.17 KB	13.06 KB	11.82 MB	126.62 KB	1.02 GB
WordSynonyms	1.29 KB	177.00 KB	12.58 KB	10.84 MB	124.75 KB	1013.99 MB
Worms	1.31 KB	132.75 KB	12.68 KB	11.08 MB	126.80 KB	1.05 GB

Table 11: Communication cost per round and in total for the baselines. Since the communication cost slightly depends on the number of classes, we report the mean cost for each architecture. Results are obtained under a non-IID setting.

MLP		ResNet		Inception	
round	total	round	total	round	total
1.56 KB	156.25 KB	117.48 MB	11.47 GB	3.35 MB	334.97 MB

Table 12: Communication cost per round and in total for the RocketFL method. The communication cost for RocketFL depends heavily on the number of classes. Formally, it can be calculated as: $[(K*2)+1]*C*2*n$. We report the highest and the lowest communication costs. Results are obtained under a non-IID setting.

# classes	RFL (100)		RFL(1k)		RFL(10k)	
	round	total	round	total	round	total
2	12.56 KB	1.23 MB	125.06 KB	12.21 MB	1.22 MB	122.08 MB
60	376.88 KB	36.80 MB	3.66 MB	366.39 MB	36.62 MB	3.58 GB

The formula $[(K*2)+1]*C*2*n$ used to estimate the communication cost in RocketFL is derived as follows. Each kernel extracts two features (specifically, the maximum and the proportion of positive values), and an additional bias term is included, resulting in a total of $(K*2)+1$ parameters per kernel. This quantity is then multiplied by C, the number of output classes, n, the number of clients, and a factor of 2 to account for both the transmission and reception of model parameters during communication rounds.