synchronous Batch Size: 32, Bias: only label 8 0.990 10 0.985 15 20 25 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{1} Communication Cost (GB)

synchronous Batch Size: 64, Bias: only label 8 0.990 10 0.985 20 25 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{1} Communication Cost (GB)

synchronous Batch Size: 128, Bias: only label 8 0.985 0.980 Accuracy 0.970 55 60 0.965 0.960 10^1 Communication Cost (GB)

synchronous Batch Size: 256, Bias: only label 8 0.990 10 0.985 20 0.980 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{1} Communication Cost (GB)

gm Theta: 0.5, Batch Size: 32, Bias: only label 8 0.990 10 0.985 15 20 25 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10⁰ 10^{1} Communication Cost (GB)

naive Theta: 0.5, Batch Size: 32, Bias: only label 8 0.990 0.985 20 0.980 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

linear Theta: 0.5, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 6.00 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

sketch Theta: 0.5, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 6.00 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

gm Theta: 1.5, Batch Size: 32, Bias: only label 8 0.990 0.985 20 0.980 Accuracy 35 0.975 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

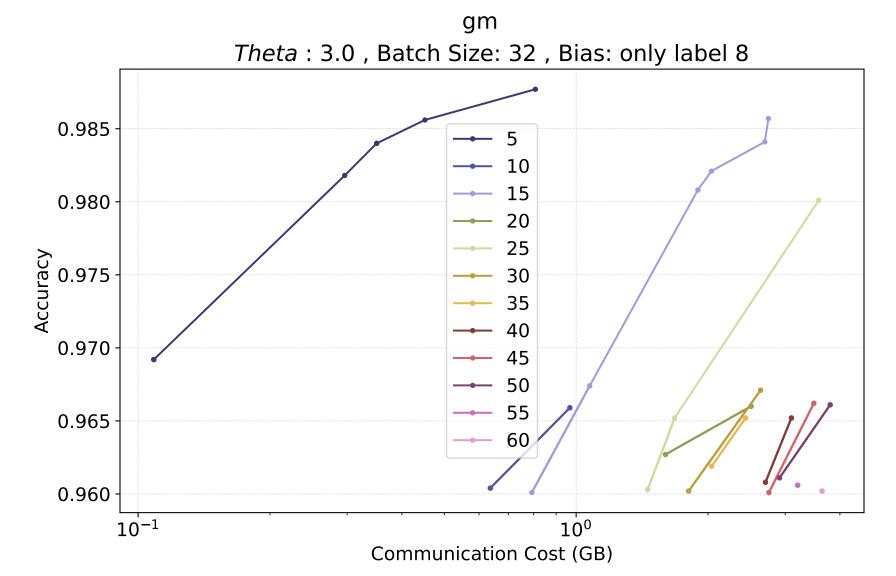
naive Theta: 1.5, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 40 0.970 55 0.965 0.960 100 Communication Cost (GB)

linear Theta: 1.5, Batch Size: 32, Bias: only label 8 0.990 0.985 0.980 0.975 45 50 0.970 60 0.965 0.960 10^{-1} 100

Communication Cost (GB)

Accuracy

sketch Theta: 1.5, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 6.00 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)



naive Theta: 3.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 0.975 0.965 0.960 100 10^{-1} Communication Cost (GB)

linear Theta: 3.0, Batch Size: 32, Bias: only label 8 10 0.985 20 0.980 25 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 10^{-1}

Communication Cost (GB)

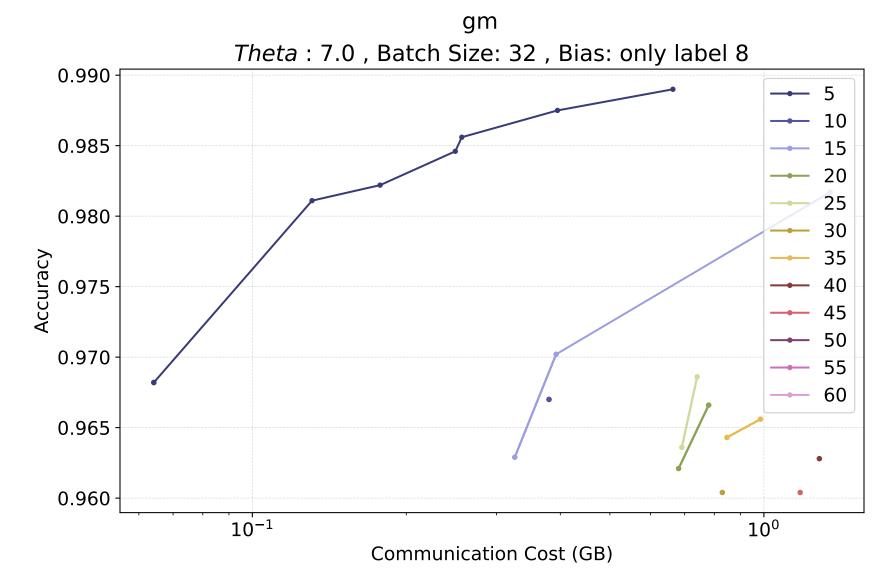
sketch Theta: 3.0, Batch Size: 32, Bias: only label 8 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

gm Theta: 5.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 5.60 0.970 0.965 0.960 10^{-1} 100 Communication Cost (GB)

naive Theta: 5.0, Batch Size: 32, Bias: only label 8 10 0.985 20 0.980 25 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 5.0, Batch Size: 32, Bias: only label 8 10 0.985 20 0.980 25 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 2×10^{-1} 3×10^{-1} 10^{-1} 4×10^{-1} Communication Cost (GB)

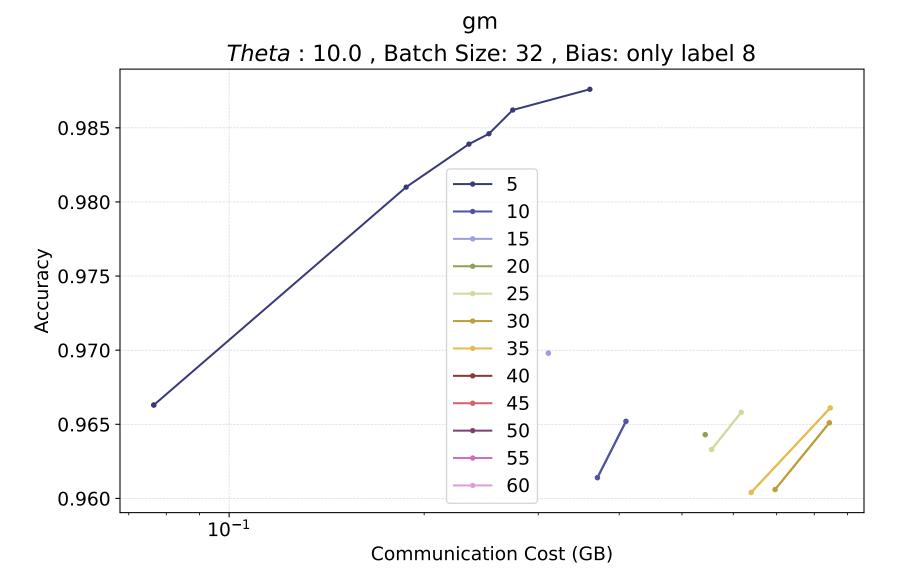
sketch Theta: 5.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 0.975 0.970 0.965 0.960 100 Communication Cost (GB)



naive Theta: 7.0, Batch Size: 32, Bias: only label 8 10 0.985 20 0.980 25 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 2×10^{-1} 3×10^{-1} 4×10^{-1} Communication Cost (GB)

linear Theta: 7.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 0.975 0.970 60 0.965 0.960 6×10^{-2} 10^{-1} 2×10^{-1} 3×10^{-1} 4×10^{-1} Communication Cost (GB)

sketch Theta: 7.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 0.970 60 0.965 0.960 3×10^{-1} 4×10^{-1} 2×10^{-1} 6×10^{-1} 100 Communication Cost (GB)

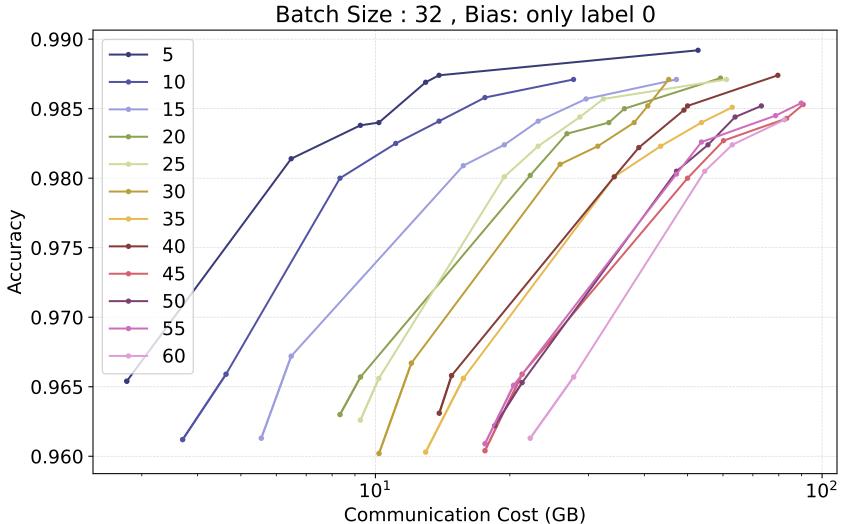


naive Theta: 10.0, Batch Size: 32, Bias: only label 8 0.985 0.980 15 O.975 O.970 20 25 30 35 40 45 0.965 50 55 60 0.960 10^{-1} 2×10^{-1} Communication Cost (GB)

linear Theta: 10.0, Batch Size: 32, Bias: only label 8 0.985 0.980 Accuracy 0.70 0.970 0.965 3×10^{-1} 10^{-1} 2×10^{-1} Communication Cost (GB)

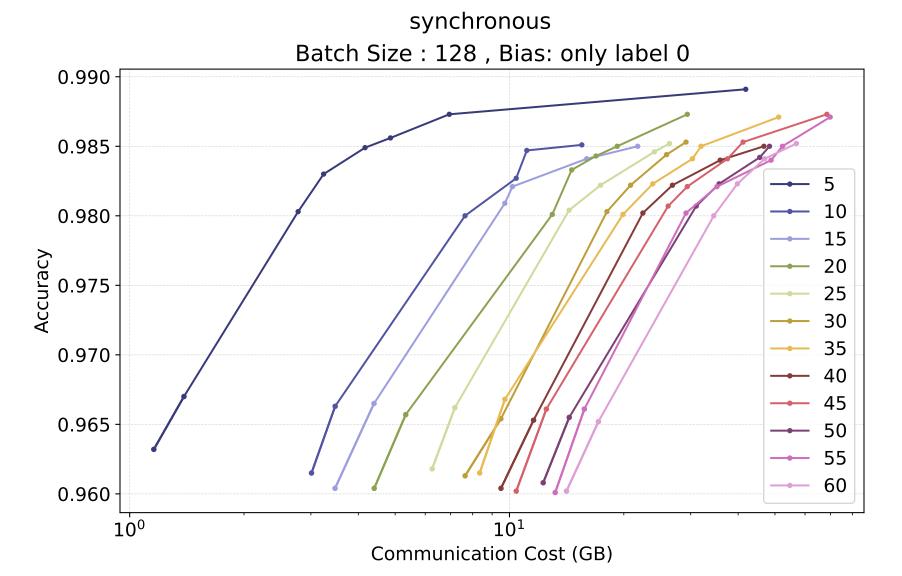
sketch Theta: 10.0, Batch Size: 32, Bias: only label 8 0.980 Accuracy 2.60 0.970 0.965 3×10^{-1} 4×10^{-1} 6×10^{-1} Communication Cost (GB)

synchronous



synchronous Batch Size: 64, Bias: only label 0 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{1} 10²

Communication Cost (GB)



synchronous Batch Size: 256, Bias: only label 0 0.990 0.985 10 0.980 15 Accuracy 20 0.975 25 30 35 0.970 40 45 0.965 50 55 60 0.960

10¹

Communication Cost (GB)

10²

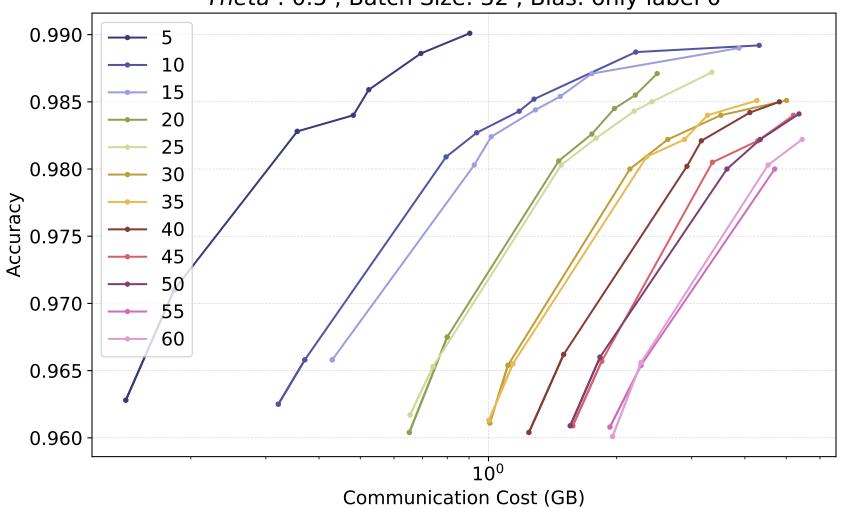
100

gm Theta: 0.5, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 25 0.980 30 Accuracy 35 40 0.975 50 0.970 55 60 0.965 0.960 100 10^{1} Communication Cost (GB)

naive Theta: 0.5, Batch Size: 32, Bias: only label 0 0.990 0.985 20 0.980 30 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

linear

Theta: 0.5, Batch Size: 32, Bias: only label 0



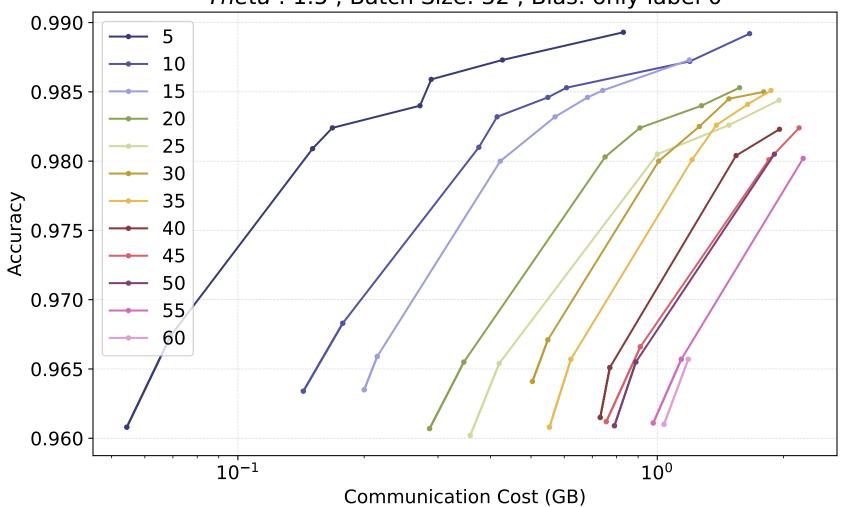
sketch Theta: 0.5, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 Accuracy 35 0.975 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

gm Theta: 1.5, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 10⁰ Communication Cost (GB)

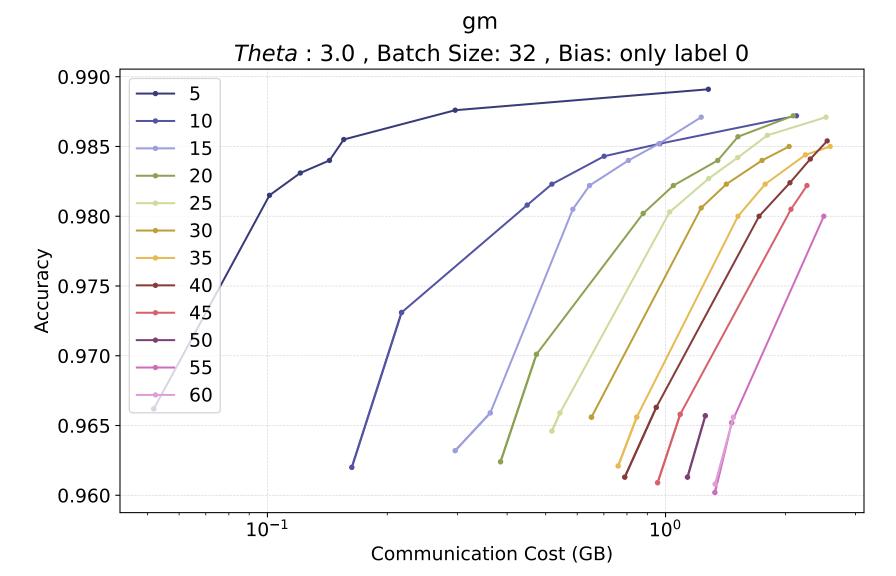
naive Theta: 1.5, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

linear

Theta: 1.5, Batch Size: 32, Bias: only label 0

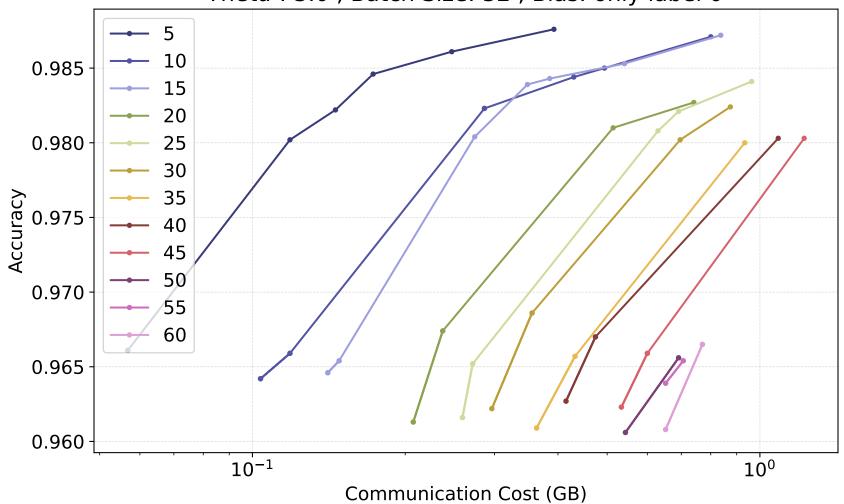


sketch Theta: 1.5, Batch Size: 32, Bias: only label 0 0.985 0.980 30 Accuracy 546.0 45 50 0.970 55 60 0.965 0.960 10^{-1} 10⁰ Communication Cost (GB)



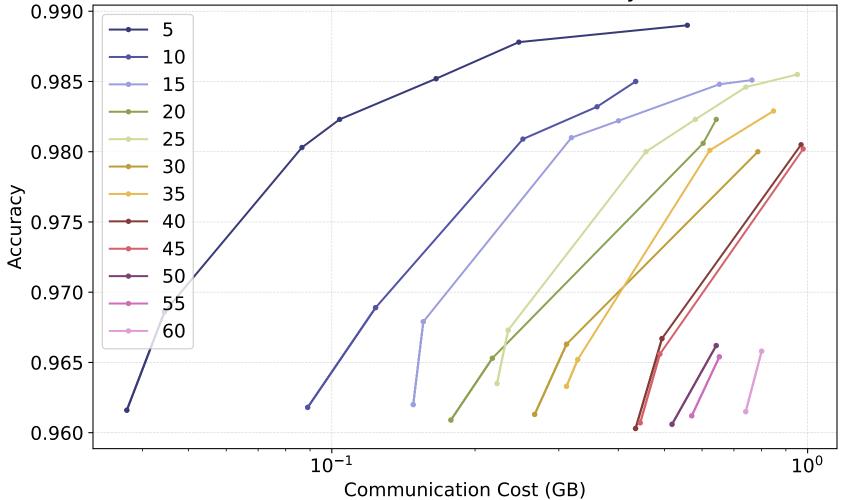
naive

Theta: 3.0, Batch Size: 32, Bias: only label 0



linear

Theta: 3.0, Batch Size: 32, Bias: only label 0



sketch Theta: 3.0, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

gm Theta: 5.0, Batch Size: 32, Bias: only label 0 5 10 0.985 15 20 0.980 25 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

naive Theta: 5.0, Batch Size: 32, Bias: only label 0 0.985 0.980 Accuracy 0.975 40 0.970 55 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 5.0, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

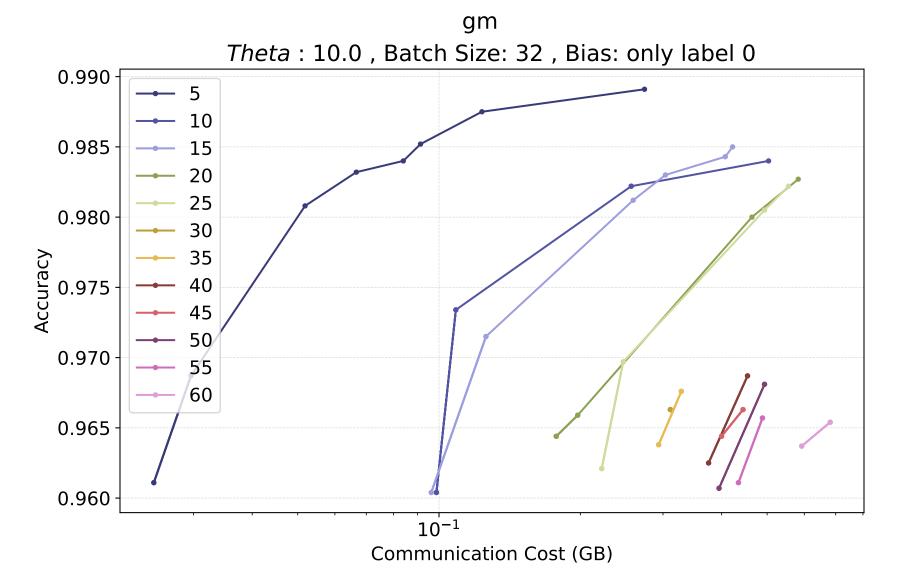
sketch Theta: 5.0, Batch Size: 32, Bias: only label 0 0.985 0.980 Accuracy 6.00 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

gm Theta: 7.0, Batch Size: 32, Bias: only label 0 0.985 0.980 30 Accuracy 5.600 45 50 0.970 55 60 0.965 0.960 100 10^{-1} Communication Cost (GB)

naive Theta: 7.0, Batch Size: 32, Bias: only label 0 0.985 0.980 10 15 Accuracy 0.975 20 25 30 0.970 35 40 45 0.965 50 55 60 0.960 10^{-1} Communication Cost (GB)

linear Theta: 7.0, Batch Size: 32, Bias: only label 0 0.990 10 0.985 20 0.980 Accuracy 0.975 45 50 0.970 60 0.965 0.960 10-1 Communication Cost (GB)

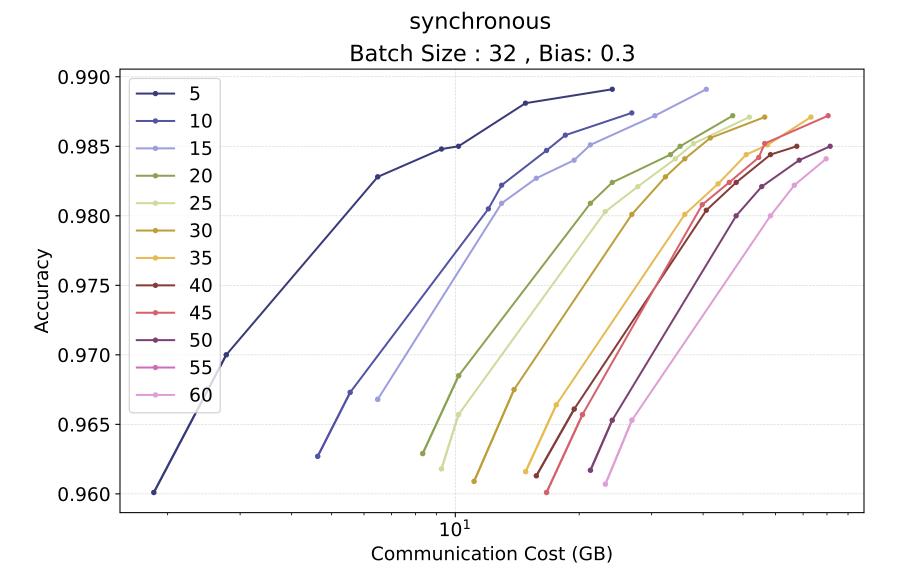
sketch Theta: 7.0, Batch Size: 32, Bias: only label 0 0.985 0.980 Accuracy 0.75 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

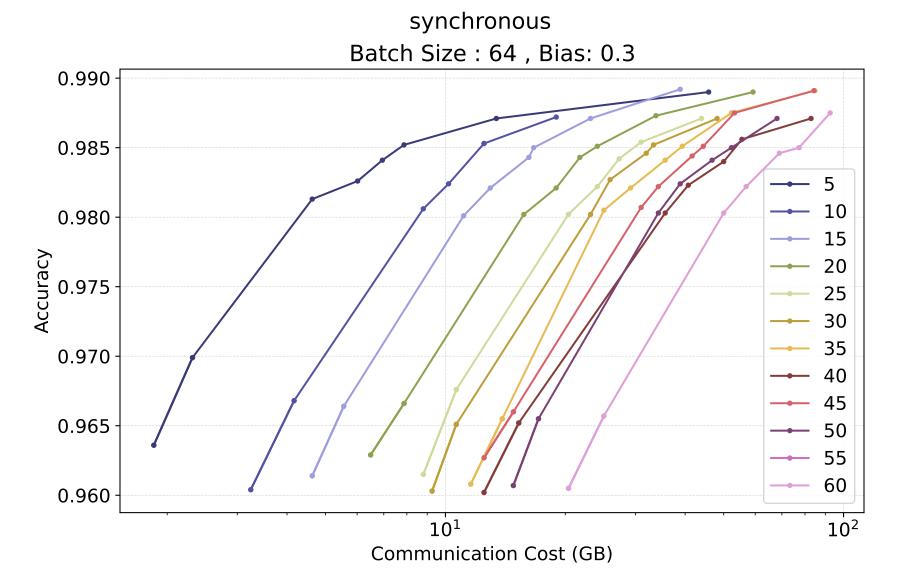


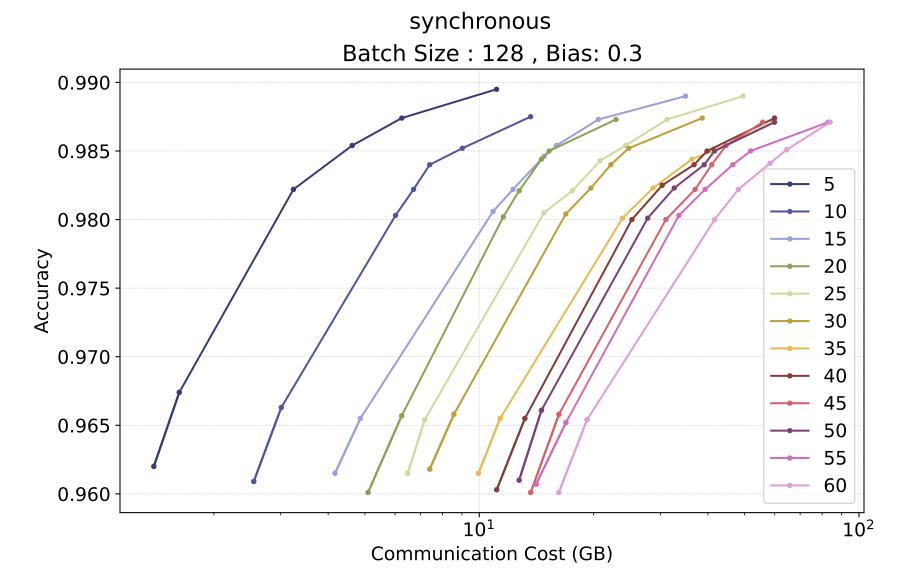
naive Theta: 10.0, Batch Size: 32, Bias: only label 0 0.985 0.980 Accuracy 0.75 0.970 0.965 0.960 10⁻¹ Communication Cost (GB)

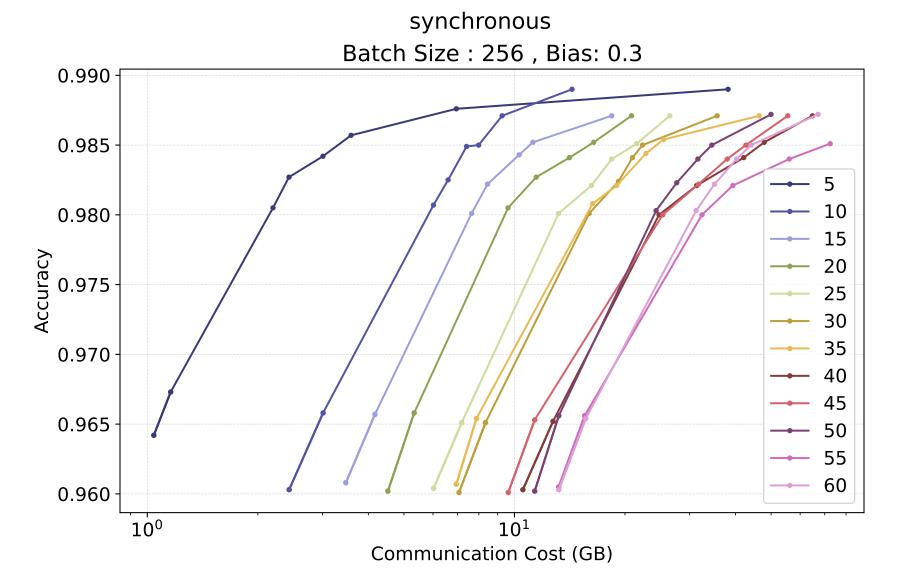
linear Theta: 10.0, Batch Size: 32, Bias: only label 0 0.985 0.980 Accuracy 5.06.0 45 50 0.970 0.965 0.960 10 -1 Communication Cost (GB)

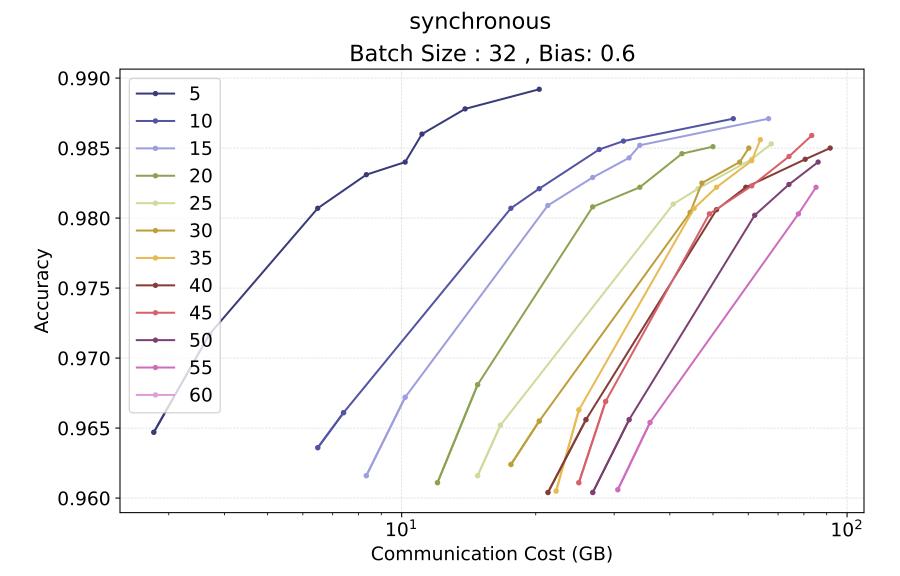
sketch Theta: 10.0, Batch Size: 32, Bias: only label 0 0.985 0.980 30 Accuracy 526.0 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

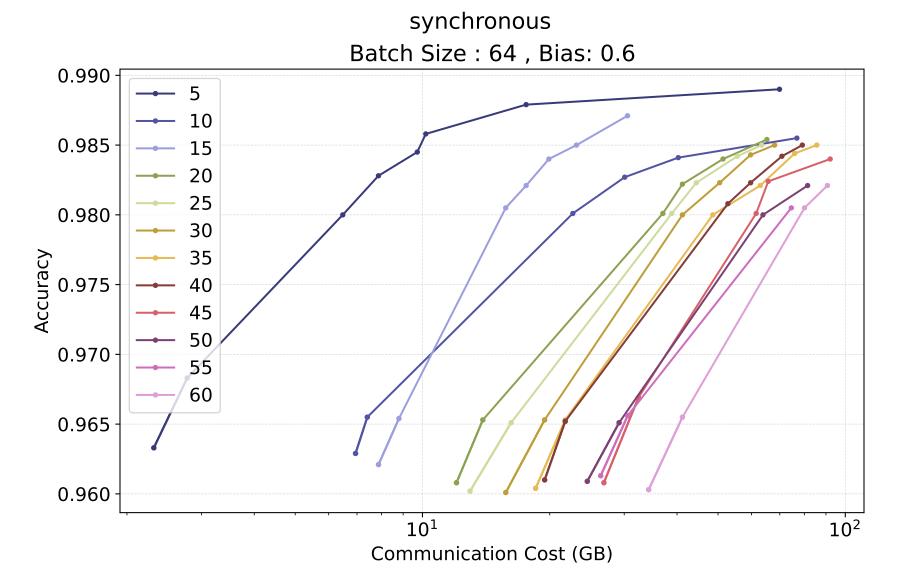












synchronous Batch Size: 128, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{1} 10² Communication Cost (GB)

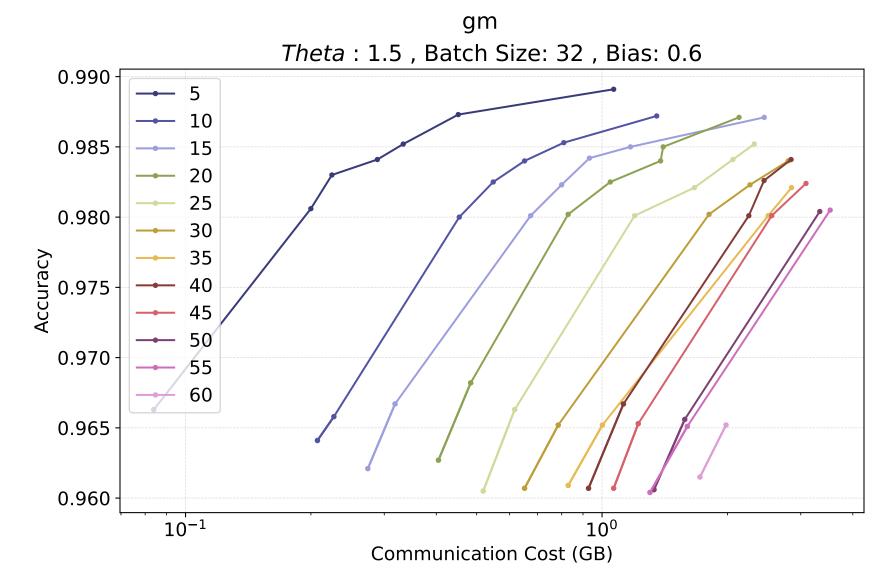
synchronous Batch Size: 256, Bias: 0.6 0.985 0.980 30 Accuracy 40 45 50 0.970 55 60 0.965 0.960 10^{1} 10² Communication Cost (GB)

gm Theta: 0.5, Batch Size: 32, Bias: 0.6 0.985 20 0.980 30 Accuracy 6.00 45 50 0.970 55 60 0.965 0.960 10° Communication Cost (GB)

naive Theta: 0.5, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

linear Theta: 0.5, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

sketch Theta: 0.5, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)





linear Theta: 1.5, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 0.975 40 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

sketch Theta: 1.5, Batch Size: 32, Bias: 0.6 0.985 20 0.980 30 Accuracy 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

naive Theta: 2.0, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

linear Theta: 2.0, Batch Size: 32, Bias: 0.6

0.985

0.980

Accuracy 0.75

0.970

0.965

0.960

30

45

50

55 60

 10^{-1}

Communication Cost (GB)

100

sketch Theta: 2.0, Batch Size: 32, Bias: 0.6 0.985 20 0.980 30 Accuracy 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)



naive Theta: 3.0, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 6.00 40 45 50 0.970 55 60 0.965 0.960 10-1 100 Communication Cost (GB)

linear Theta: 3.0, Batch Size: 32, Bias: 0.6

0.985

0.980

Accuracy 6.00

0.970

0.965

0.960

30

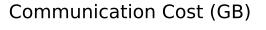
40

45

50

55

60



 10^{0}

 10^{-1}

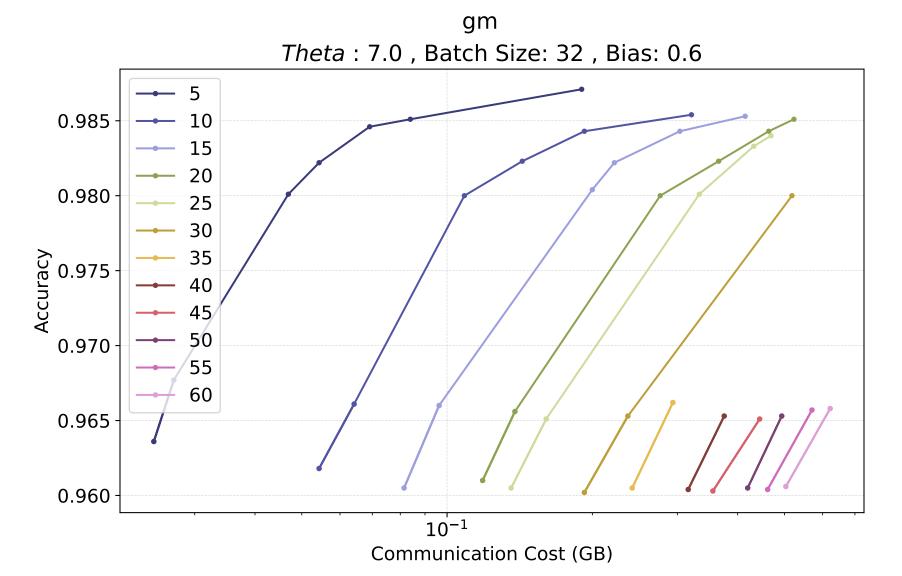
sketch Theta: 3.0, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

gm Theta: 5.0, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 6.00 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

naive Theta: 5.0, Batch Size: 32, Bias: 0.6 0.985 20 0.980 30 Accuracy 6.00 c 40 45 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

linear Theta: 5.0, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 6.00 40 45 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

sketch Theta: 5.0, Batch Size: 32, Bias: 0.6 0.985 0.980 Accuracy 0.75 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)



naive Theta: 7.0, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 7.0, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

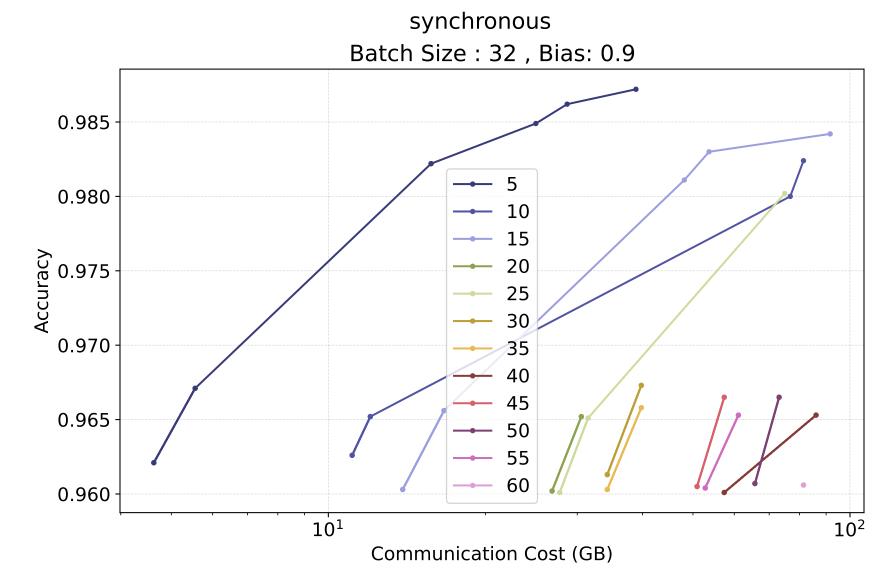
sketch Theta: 7.0, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 Accuracy 35 40 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

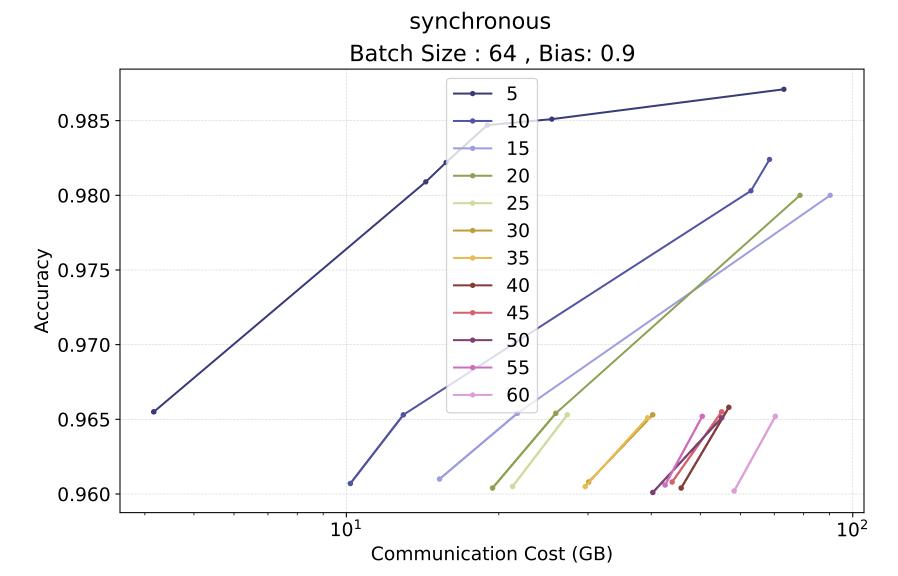
gm Theta: 10.0, Batch Size: 32, Bias: 0.6 0.985 20 0.980 30 Accuracy 5.06.0 45 50 0.970 55 60 0.965 0.960 10⁻¹ Communication Cost (GB)

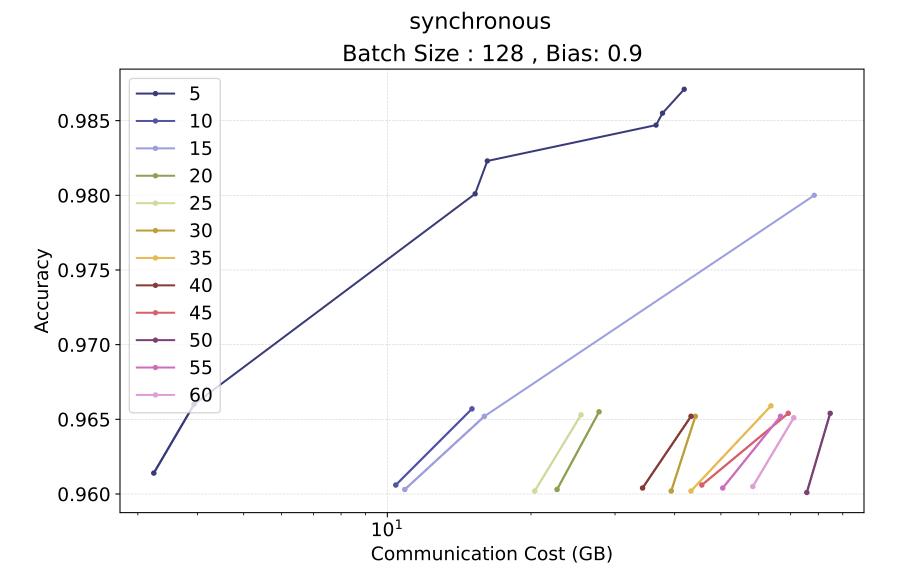
naive Theta: 10.0, Batch Size: 32, Bias: 0.6 0.985 0.980 30 Accuracy 40 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 10.0, Batch Size: 32, Bias: 0.6 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

sketch Theta: 10.0, Batch Size: 32, Bias: 0.6 0.985 0.980 Accuracy 45 50 0.970 60 0.965 0.960 10 -1 100 Communication Cost (GB)



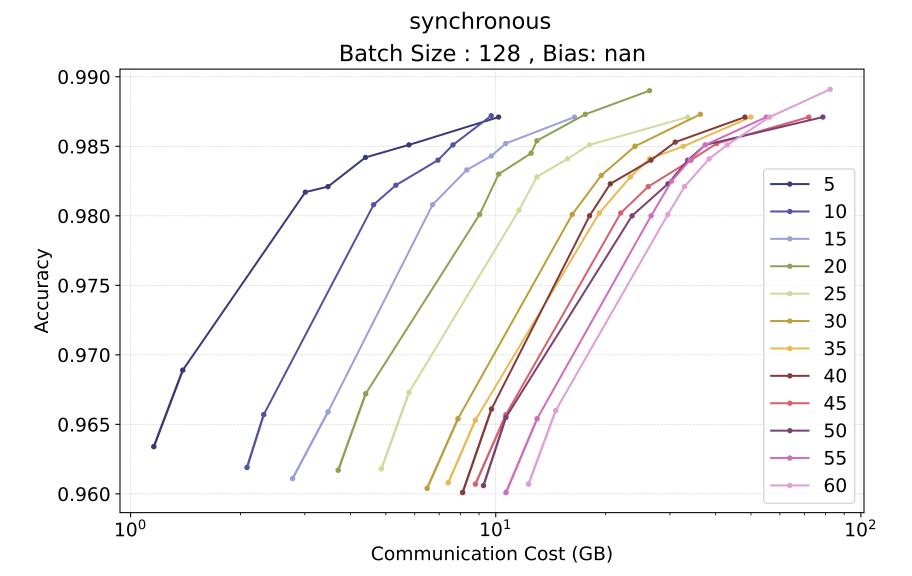


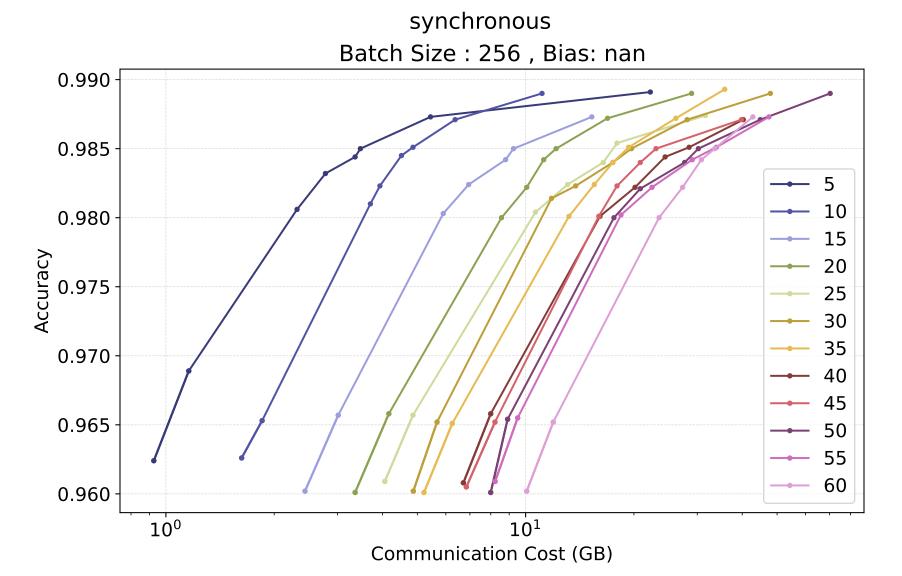


synchronous Batch Size: 256, Bias: 0.9 0.985 0.980 Accuracy 970.0 970.0 60 0.965 0.960 10^{1} Communication Cost (GB)

synchronous Batch Size: 32, Bias: nan 0.990 0.985 0.980 15 Accuracy 20 0.975 25 30 35 0.970 40 45 0.965 50 55 60 0.960 10^{1} 10² Communication Cost (GB)

synchronous Batch Size: 64, Bias: nan 0.990 0.985 0.980 15 Accuracy 20 0.975 25 30 35 0.970 40 45 0.965 50 55 60 0.960 10^{1} 102 Communication Cost (GB)





gm Theta: 0.5, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

naive Theta: 0.5, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

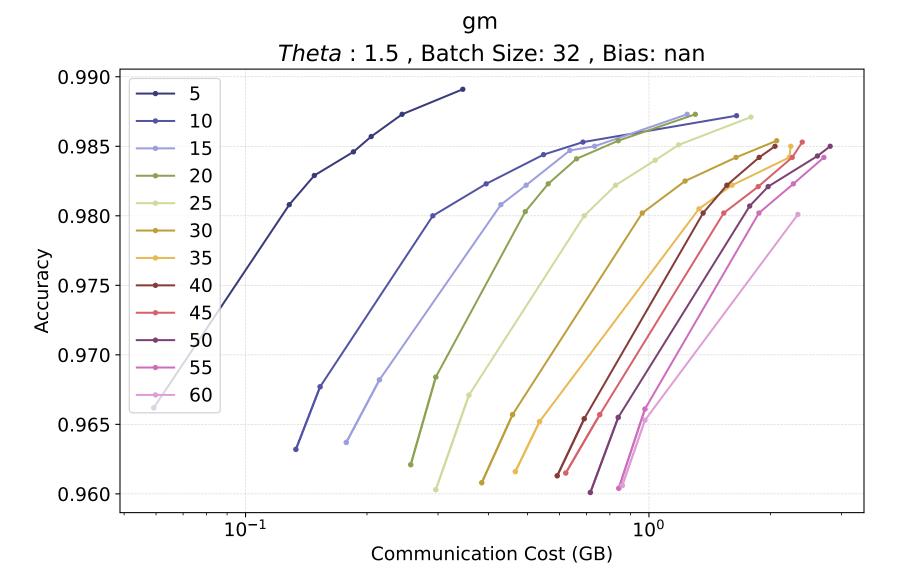
linear Theta: 0.5, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

sketch Theta: 0.5, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 100 Communication Cost (GB)

naive Theta: 1.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

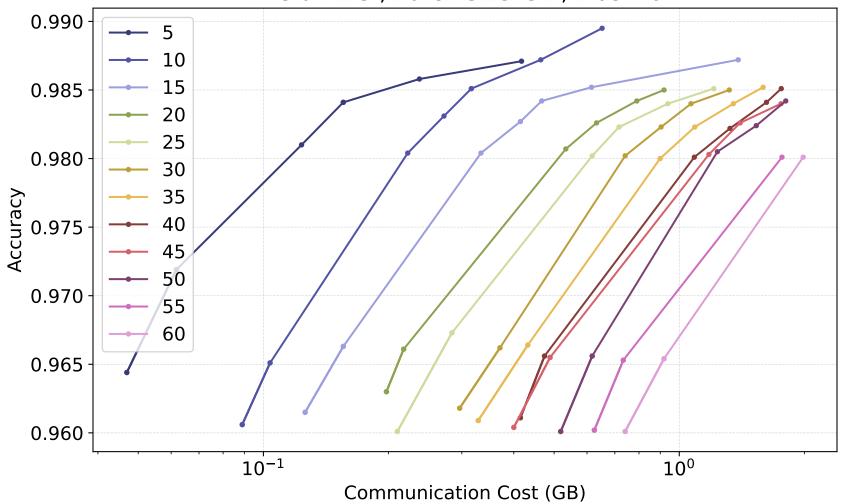
linear Theta: 1.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

sketch Theta: 1.0, Batch Size: 32, Bias: nan 0.985 20 0.980 30 Accuracy 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 10⁰ Communication Cost (GB)



naive Theta: 1.5, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

linear Theta: 1.5, Batch Size: 32, Bias: nan



sketch Theta: 1.5, Batch Size: 32, Bias: nan 0.985 20 0.980 30 Accuracy 5.06.0 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 10° Communication Cost (GB)

gm Theta: 2.0, Batch Size: 32, Bias: nan 0.985 20 0.980 30 Accuracy 5.00 40 50 0.970 55 60 0.965 0.960 10^{-1} 10° Communication Cost (GB)

naive Theta: 2.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

linear Theta: 2.0, Batch Size: 32, Bias: nan 10^{-1} 100

Communication Cost (GB)

0.990

0.985

0.980

0.975

0.970

0.965

0.960

Accuracy

10

20

30

35

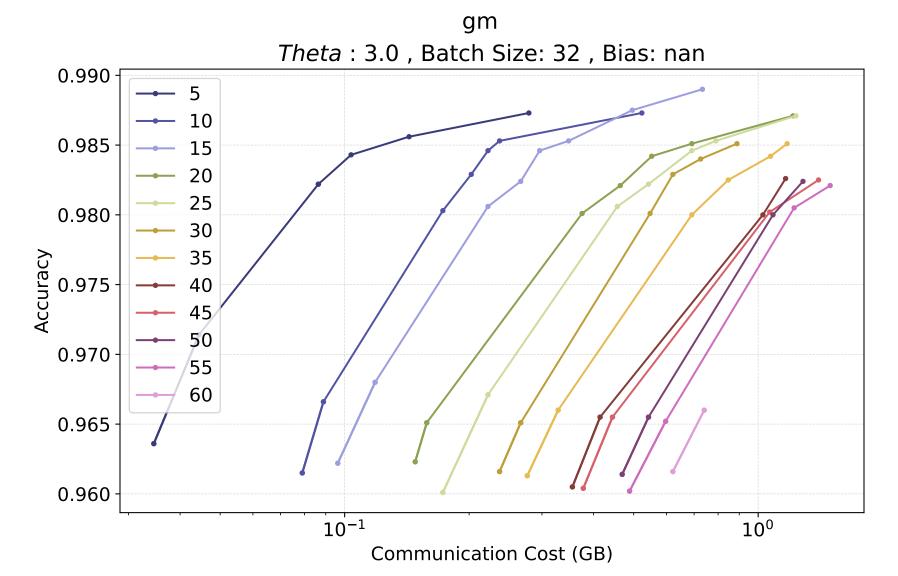
45

50

55

60

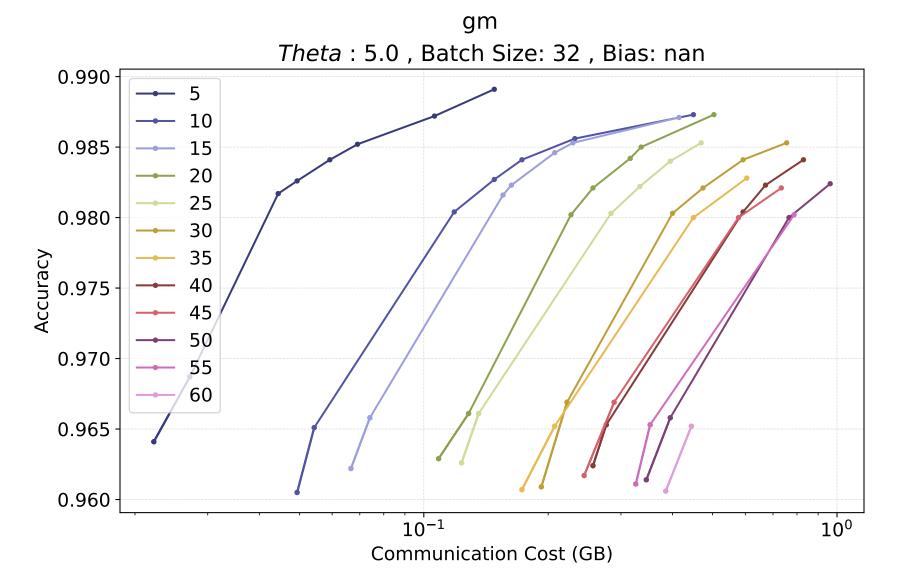
sketch Theta: 2.0, Batch Size: 32, Bias: nan 0.985 20 0.980 30 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 10⁰ Communication Cost (GB)



naive Theta: 3.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10-1 100 Communication Cost (GB)

linear Theta: 3.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10-1 100 Communication Cost (GB)

sketch Theta: 3.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)



naive Theta: 5.0, Batch Size: 32, Bias: nan 0.985 0.980 30 Accuracy 6.00 40 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 5.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

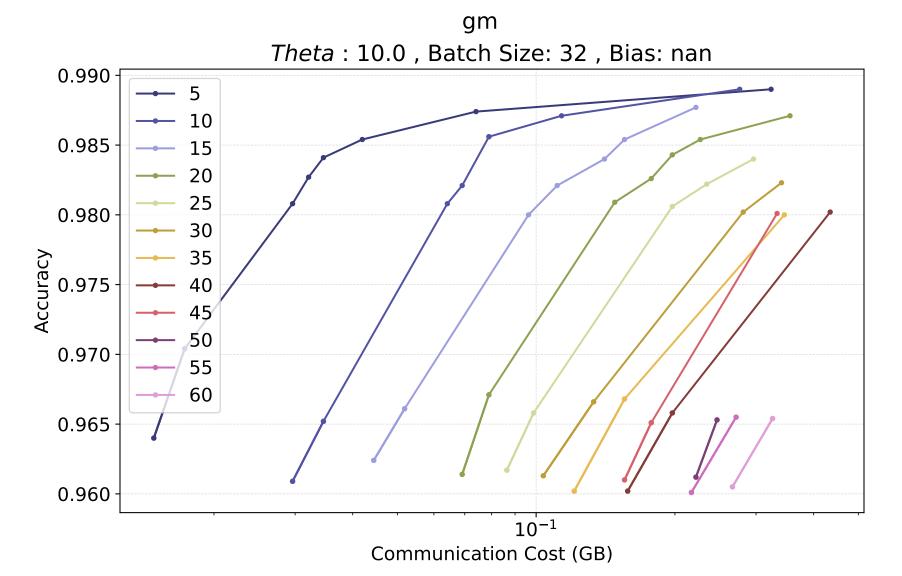
sketch Theta: 5.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

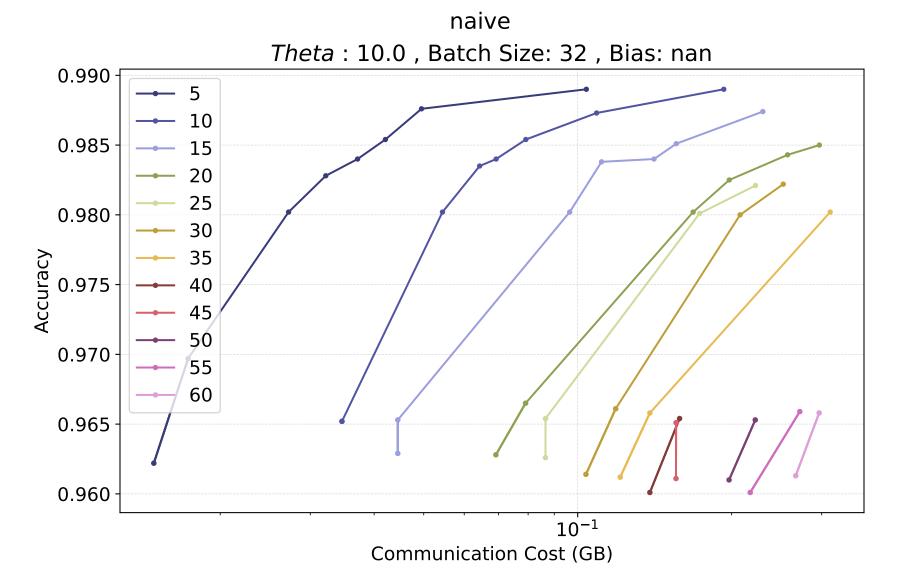
gm Theta: 7.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

naive Theta: 7.0, Batch Size: 32, Bias: nan 0.985 20 0.980 30 Accuracy 5.00 40 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

linear Theta: 7.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10-1 Communication Cost (GB)

sketch Theta: 7.0, Batch Size: 32, Bias: nan 0.985 0.980 30 Accuracy 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

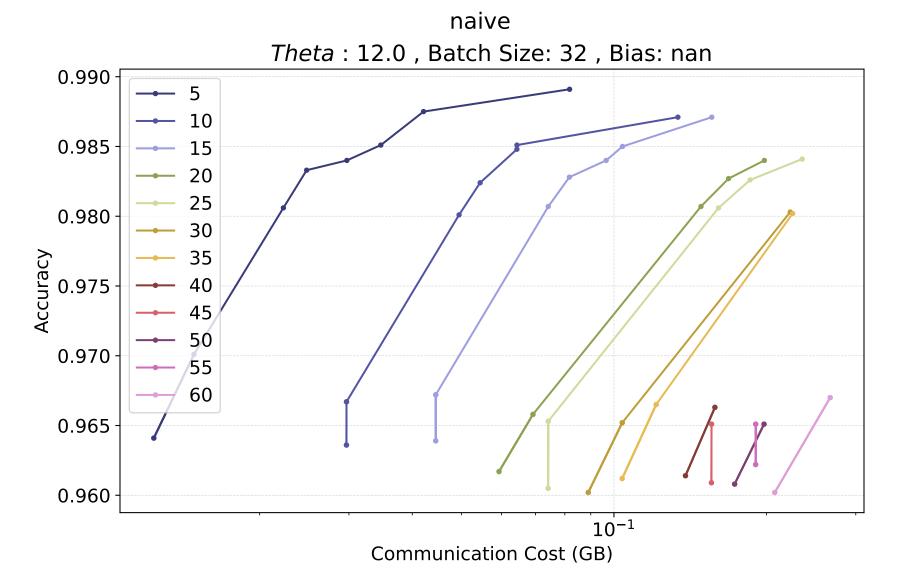




linear Theta: 10.0, Batch Size: 32, Bias: nan 0.985 0.980 30 Accuracy 6.00 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

sketch Theta: 10.0, Batch Size: 32, Bias: nan 0.990 0.985 20 0.980 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

gm Theta: 12.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 25 0.980 30 Accuracy 35 40 0.975 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)



linear Theta: 12.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

sketch Theta: 12.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} 100 Communication Cost (GB)

gm Theta: 15.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 35 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

naive Theta: 15.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 0.980 30 Accuracy 0.975 45 50 0.970 55 60 0.965 0.960 10^{-1} Communication Cost (GB)

linear Theta: 15.0, Batch Size: 32, Bias: nan 0.990 10 0.985 20 25 0.980 30 Accuracy 35 0.975 40 45 50 0.970 55 60 0.965 0.960 10-1 10^{-2} Communication Cost (GB)

sketch Theta: 15.0, Batch Size: 32, Bias: nan 0.990 0.985 0.980 10 15 Accuracy 20 0.975 25 30 35 0.970 40 45 0.965 50 55 60 0.960 10-1 100 Communication Cost (GB)