Table 9: Unlearning performance of 10 unlearning methods on **CIFAR-10** with **ResNet-18** in 10% **random data forgetting** scenario. The results are reported in the format a±b, where a is the mean and b is the standard deviation from 3 independent trials. The performance gap relative to Retrain method is represented in (•).

Methods	α	Coverage		Set Size		CR		$\hat{q}$
		$\mathcal{D}_f \downarrow$	$\mathcal{D}_{test} \uparrow$	$\mathcal{D}_f \uparrow$	$\mathcal{D}_{test} \downarrow$	$\mathcal{D}_f \downarrow$	$\mathcal{D}_{test} \uparrow$	
RT **UA**8.6%, **RA**99.7%, **TA**91.8%	0.05	$0.941_{\pm 0.002}(0.000)$	$0.944_{\pm 0.005}(0.000)$	$1.089_{\pm 0.002}(0.000)$	$1.074_{\pm 0.011}(0.000)$	$0.864_{\pm 0.004}(0.000)$	$0.879_{\pm 0.004}(0.000)$	$0.883_{\pm 0.007}$
	0.1	$0.881_{\pm 0.000}(0.000)$	$0.895_{\pm 0.010}(0.000)$	$0.934_{\pm 0.004}(0.000)$	$0.947_{\pm 0.008}(0.000)$	$0.943_{\pm 0.011}(0.000)$	$0.945_{\pm 0.001}(0.000)$	$0.192_{\pm 0.001}$
	0.15	$0.820_{\pm 0.002}(0.000)$	$0.839_{\pm 0.008}(0.000)$	$0.841_{\pm 0.009}(0.000)$	$0.867_{\pm 0.009}(0.000)$	$0.975_{\pm 0.001}(0.000)$	$0.968_{\pm 0.003}(0.000)$	$0.015_{\pm 0.011}$
	0.2	$0.780_{\pm 0.007}(0.000)$	$0.808_{\pm 0.004}(0.000)$	$0.789_{\pm 0.002}(0.000)$	$0.824_{\pm 0.009}(0.000)$	$0.988_{\pm 0.006}(0.000)$	$0.981_{\pm 0.007}(0.000)$	$0.003_{\pm 0.002}$
FT **UA**3.8%, **RA**98.1%, **TA**91.6%	0.05	$0.994_{\pm 0.001}(0.053)$	$0.951_{\pm 0.004}(0.007)$	$1.008_{\pm 0.003}(0.081)$	$1.026_{\pm 0.008}(0.048)$	$0.986_{\pm 0.003}(0.122)$	$0.927_{\pm 0.004}(0.048)$	$0.721_{\pm 0.045}$
	0.1	$0.968_{\pm 0.001}(0.087)$	$0.899_{\pm 0.005}(0.004)$	$0.969_{\pm 0.001}(0.035)$	$0.924_{\pm 0.008}(0.023)$	$0.998_{\pm 0.001}(0.055)$	$0.972_{\pm 0.003}(0.027)$	$0.079_{\pm 0.013}$
	0.15	$0.915_{\pm 0.003}(0.095)$	$0.848_{\pm 0.002}(0.009)$	$0.916_{\pm 0.003}(0.075)$	$0.860_{\pm 0.001}(0.007)$	$1.000_{\pm 0.000}(0.025)$	$0.986_{\pm 0.002}(0.018)$	$0.008_{\pm 0.000}$
	0.2	$0.861_{\pm 0.010}(0.081)$	$0.806_{\pm 0.008}(0.002)$	$0.861_{\pm 0.010}(0.072)$	$0.811_{\pm 0.009}(0.013)$	$1.000_{\pm 0.000}(0.012)$	$0.993_{\pm 0.001}(0.012)$	$0.002_{\pm 0.000}$
RL **UA**7.6%, **RA**97.4%, **TA**90.6%	0.05	$0.970_{\pm 0.006}(0.029)$	$0.949_{\pm 0.005}(0.005)$	$1.242_{\pm 0.151}(0.153)$	$1.197_{\pm 0.098}(0.123)$	$0.788_{\pm 0.089}(0.076)$	$0.796_{\pm 0.061}(0.083)$	$0.877_{\pm 0.057}$
	0.1	$0.913_{\pm 0.010}(0.032)$	$0.897_{\pm 0.007}(0.002)$	$0.975_{\pm 0.028}(0.041)$	$0.980_{\pm 0.025}(0.033)$	$0.936_{\pm 0.022}(0.007)$	$0.916_{\pm 0.019}(0.029)$	$0.572_{\pm 0.059}$
	0.15	$0.825_{\pm 0.006}(0.005)$	$0.843_{\pm 0.009}(0.004)$	$0.854_{\pm 0.010}(0.013)$	$0.888_{\pm 0.017}(0.021)$	$0.966_{\pm 0.006}(0.009)$	$0.949_{\pm 0.009}(0.019)$	$0.329_{\pm 0.021}$
	0.2	$0.755_{\pm 0.021}(0.025)$	$0.798_{\pm 0.005}(0.010)$	$0.774_{\pm 0.020}(0.015)$	$0.832_{\pm 0.009}(0.008)$	$0.976_{\pm 0.002}(0.012)$	$0.959_{\pm 0.005}(0.022)$	$0.234_{\pm 0.028}$
GA **UA**0.6%, **RA**99.5%, **TA**94.1%	0.05	$0.994_{\pm 0.003}(0.053)$	$0.945_{\pm 0.008}(0.001)$	$1.002_{\pm 0.010}(0.087)$	$1.009_{\pm 0.010}(0.065)$	$0.994_{\pm 0.016}(0.130)$	$0.936_{\pm 0.011}(0.057)$	$0.621_{\pm 0.015}$
	0.1	$0.990_{\pm 0.005}(0.109)$	$0.905_{\pm 0.019}(0.010)$	$0.990_{\pm 0.014}(0.056)$	$0.928_{\pm 0.005}(0.019)$	$0.998_{\pm 0.002}(0.055)$	$0.973_{\pm 0.012}(0.028)$	$0.062_{\pm 0.016}$
	0.15	$0.969_{\pm 0.012}(0.149)$	$0.848_{\pm 0.004}(0.009)$	$0.969_{\pm 0.014}(0.128)$	$0.858_{\pm 0.019}(0.009)$	$1.000_{\pm 0.014}(0.025)$	$0.986_{\pm 0.008}(0.018)$	$0.006_{\pm 0.009}$
	0.2	$0.925_{\pm 0.012}(0.145)$	$0.805_{\pm 0.022}(0.003)$	$0.924_{\pm 0.007}(0.135)$	$0.811_{\pm 0.013}(0.013)$	$0.998_{\pm 0.013}(0.010)$	$0.992_{\pm 0.012}(0.011)$	$0.003_{\pm 0.005}$
Teacher **UA**0.8%, **RA**99.4%, **TA**93.5%	0.05	$0.991_{\pm 0.022}(0.050)$	$0.941_{\pm 0.001}(0.003)$	$1.003_{\pm 0.012}(0.086)$	$1.021_{\pm 0.009}(0.053)$	$0.993_{\pm 0.021}(0.129)$	$0.922_{\pm 0.015}(0.043)$	$0.744_{\pm 0.015}$
	0.1	$0.967_{\pm 0.000}(0.086)$	$0.898_{\pm 0.007}(0.003)$	$0.963_{\pm 0.007}(0.029)$	$0.929_{\pm 0.018}(0.018)$	$0.998_{\pm 0.000}(0.055)$	$0.969_{\pm 0.013}(0.024)$	$0.591_{\pm 0.005}$
	0.15	$0.913_{\pm 0.006}(0.093)$	$0.845_{\pm 0.007}(0.006)$	$0.912_{\pm 0.014}(0.071)$	$0.859_{\pm 0.005}(0.008)$	$0.996_{\pm 0.018}(0.021)$	$0.983_{\pm 0.015}(0.015)$	$0.481_{\pm 0.009}$
	0.2	$0.865_{\pm 0.009}(0.085)$	$0.806_{\pm 0.021}(0.002)$	$0.866_{\pm 0.009}(0.077)$	$0.816_{\pm 0.012}(0.008)$	$0.998_{\pm 0.008}(0.010)$	$0.988_{\pm 0.016}(0.007)$	$0.426_{\pm 0.007}$
FF **UA**59.9%, **RA**40.1%, **TA**41.1%	0.05	$0.973_{\pm 0.009}(0.032)$	$0.949_{\pm 0.001}(0.005)$	$7.966_{\pm 0.212}(6.877)$	$7.408_{\pm 0.000}(6.334)$	$0.122_{\pm 0.002}(0.742)$	$0.128_{\pm 0.000}(0.751)$	$0.999_{\pm 0.000}$
	0.1	$0.933_{\pm 0.020}(0.052)$	$0.899_{\pm 0.001}(0.004)$	$7.129_{\pm 0.148}(6.195)$	$6.566_{\pm 0.166}(5.619)$	$0.131_{\pm 0.000}(0.812)$	$0.137_{\pm 0.004}(0.808)$	$0.998_{\pm 0.001}$
	0.15	$0.888_{\pm 0.029}(0.068)$	$0.852_{\pm 0.008}(0.013)$	$6.431_{\pm 0.078}(5.590)$	$5.903_{\pm 0.262}(5.036)$	$0.138_{\pm 0.003}(0.837)$	$0.144_{\pm 0.008}(0.824)$	$0.996_{\pm 0.002}$
	0.2	$0.835_{\pm 0.048}(0.055)$	$0.794_{\pm 0.012}(0.014)$	$5.750_{\pm 0.034}(4.961)$	$5.219_{\pm 0.368}(4.395)$	$0.145_{\pm 0.007}(0.843)$	$0.153_{\pm 0.013}(0.828)$	$0.993_{\pm 0.003}$
SSD **UA**0.5%, **RA**99.5%, **TA**94.2%	0.05	$0.996_{\pm 0.004}(0.055)$	$0.945_{\pm 0.002}(0.001)$	$0.999_{\pm 0.019}(0.090)$	$1.008_{\pm 0.011}(0.066)$	$0.994_{\pm 0.006}(0.130)$	$0.936_{\pm 0.014}(0.057)$	$0.622_{\pm 0.019}$
	0.1	$0.987_{\pm 0.003}(0.106)$	$0.902_{\pm 0.010}(0.007)$	$0.990_{\pm 0.003}(0.056)$	$0.926_{\pm 0.017}(0.021)$	$0.998_{\pm 0.020}(0.055)$	$0.973_{\pm 0.002}(0.028)$	$0.063_{\pm 0.022}$
	0.15	$0.967_{\pm 0.016}(0.147)$	$0.849_{\pm 0.009}(0.010)$	$0.965_{\pm 0.000}(0.124)$	$0.862_{\pm 0.012}(0.005)$	$1.002_{\pm 0.019}(0.027)$	$0.990_{\pm 0.002}(0.022)$	$0.007_{\pm 0.007}$
	0.2	$0.922_{\pm 0.006}(0.142)$	$0.803_{\pm 0.000}(0.005)$	$0.923_{\pm 0.009}(0.134)$	$0.811_{\pm 0.005}(0.013)$	$1.002_{\pm 0.020}(0.014)$	$0.992_{\pm 0.009}(0.011)$	$0.001_{\pm 0.005}$
NegGrad+ **UA**8.7%, **RA**98.8%, **TA**92.2%	0.05	$0.934_{\pm 0.007}(0.007)$	$0.948_{\pm 0.007}(0.004)$	$1.068_{\pm 0.017}(0.021)$	$1.086_{\pm 0.022}(0.012)$	$0.875_{\pm 0.008}(0.011)$	$0.873_{\pm 0.011}(0.006)$	$0.989_{\pm 0.013}$
	0.1	$0.895_{\pm 0.004}(0.014)$	$0.898_{\pm 0.008}(0.003)$	$0.964_{\pm 0.008}(0.030)$	$0.950_{\pm 0.013}(0.003)$	$0.928_{\pm 0.005}(0.015)$	$0.946_{\pm 0.005}(0.001)$	$0.044_{\pm 0.041}$
	0.15	$0.851_{\pm 0.013}(0.031)$	$0.851_{\pm 0.016}(0.012)$	$0.896_{\pm 0.016}(0.055)$	$0.876_{\pm 0.019}(0.009)$	$0.950_{\pm 0.003}(0.025)$	$0.971_{\pm 0.003}(0.003)$	$0.000_{\pm 0.000}$
	0.2	$0.800_{\pm 0.006}(0.020)$	$0.799_{\pm 0.001}(0.009)$	$0.832_{\pm 0.006}(0.043)$	$0.813_{\pm 0.001}(0.011)$	$0.961_{\pm 0.002}(0.027)$	$0.983_{\pm 0.001}(0.002)$	$0.000_{\pm 0.000}$
Salun **UA**3.7%, **RA**98.9%, **TA**91.8%	0.05	$0.987_{\pm 0.002}(0.046)$	$0.950_{\pm 0.001}(0.006)$	$1.132_{\pm 0.007}(0.043)$	$1.143_{\pm 0.002}(0.069)$	$0.872_{\pm 0.006}(0.008)$	$0.832_{\pm 0.003}(0.047)$	$0.867_{\pm 0.001}$
	0.1	$0.936_{\pm 0.010}(0.055)$	$0.896_{\pm 0.008}(0.001)$	$0.956_{\pm 0.012}(0.022)$	$0.954_{\pm 0.011}(0.007)$	$0.979_{\pm 0.003}(0.036)$	$0.939_{\pm 0.003}(0.006)$	$0.489_{\pm 0.029}$
	0.15	$0.871_{\pm 0.005}(0.051)$	$0.849_{\pm 0.008}(0.010)$	$0.881_{\pm 0.006}(0.040)$	$0.886_{\pm 0.010}(0.019)$	$0.989_{\pm 0.002}(0.014)$	$0.958_{\pm 0.002}(0.010)$	$0.314_{\pm 0.020}$
	0.2	$0.788_{\pm 0.010}(0.008)$	$0.794_{\pm 0.001}(0.014)$	$0.794_{\pm 0.010}(0.005)$	$0.821_{\pm 0.004}(0.003)$	$0.992_{\pm 0.001}(0.004)$	$0.966_{\pm 0.003}(0.015)$	$0.221_{\pm 0.005}$
SFRon **UA**4.8%, **RA**97.4%, **TA**91.4%	0.05	$0.977_{\pm 0.003}(0.036)$	$0.953_{\pm 0.004}(0.009)$	$1.100_{\pm 0.023}(0.011)$	$1.143_{\pm 0.021}(0.069)$	$0.889_{\pm 0.015}(0.025)$	$0.834_{\pm 0.012}(0.045)$	$0.926_{\pm 0.018}$
	0.1	$0.945_{\pm 0.004}(0.064)$	$0.905_{\pm 0.005}(0.010)$	$0.986_{\pm 0.005}(0.052)$	$0.977_{\pm 0.008}(0.030)$	$0.958_{\pm 0.001}(0.015)$	$0.927_{\pm 0.003}(0.018)$	$0.435_{\pm 0.043}$
	0.15	$0.895_{\pm 0.002}(0.075)$	$0.847_{\pm 0.002}(0.008)$	$0.912_{\pm 0.004}(0.071)$	$0.879_{\pm 0.001}(0.012)$	$0.982_{\pm 0.002}(0.007)$	$0.963_{\pm 0.003}(0.005)$	$0.082_{\pm 0.007}$
	0.2	$0.857_{\pm 0.008}(0.077)$	$0.808_{\pm 0.002}(0.000)$	$0.868_{\pm 0.007}(0.079)$	$0.826_{\pm 0.005}(0.002)$	$0.988_{\pm 0.002}(0.000)$	$0.978_{\pm 0.004}(0.003)$	$0.025_{\pm 0.005}$

Table 10: Unlearning performance of 10 unlearning methods on **CIFAR-10** with **ResNet18** in 50% **random data forgetting** scenario.

Methods	α	Coverage		Set Size		CR		
		$\mathcal{D}_f \downarrow$	$\mathcal{D}_{test} \uparrow$	$\mathcal{D}_f \uparrow$	$\mathcal{D}_{test} \downarrow$	$\mathcal{D}_f \downarrow$	$\mathcal{D}_{test} \uparrow$	$\hat{q}$
RT	0.05	$0.955_{\pm 0.004}(0.000)$	$0.947_{\pm 0.005}(0.000)$	$1.287_{\pm 0.001}(0.000)$	$1.214_{\pm 0.010}(0.000)$	$0.742_{\pm 0.005}(0.000)$	$0.780_{\pm 0.006}(0.000)$	$0.984_{\pm 0.002}$
UA11.0%, **RA**99.8%, **TA**89.2%	0.1	$0.898_{\pm 0.011}(0.000)$	$0.904_{\pm 0.010}(0.000)$	$1.023_{\pm 0.005}(0.000)$	$1.021_{\pm 0.003}(0.000)$	$0.878_{\pm 0.003}(0.000)$	$0.886_{\pm 0.003}(0.000)$	$0.650_{\pm 0.004}$
	0.15	$0.833_{\pm 0.007}(0.000)$	$0.847_{\pm 0.005}(0.000)$	$0.883_{\pm 0.002}(0.000)$	$0.906_{\pm 0.003}(0.000)$	$0.943_{\pm 0.010}(0.000)$	$0.934_{\pm 0.005}(0.000)$	$0.090_{\pm 0.004}$
	0.2	$0.782_{\pm 0.005}(0.000)$	$0.814_{\pm 0.004}(0.000)$	$0.812_{\pm 0.010}(0.000)$	$0.850_{\pm 0.009}(0.000)$	$0.964_{\pm 0.005}(0.000)$	$0.958_{\pm 0.003}(0.000)$	$0.018_{\pm 0.006}$
FT	0.05	$0.996_{\pm 0.000}(0.041)$	$0.952_{\pm 0.002}(0.005)$	$1.007_{\pm 0.000}(0.280)$	$1.029_{\pm 0.004}(0.185)$	$0.989_{\pm 0.001}(0.247)$	$0.925_{\pm 0.002}(0.145)$	$0.738_{\pm 0.014}$
UA2.6%, **RA**99.1%, **TA**91.8%	0.1	$0.975_{\pm 0.006}(0.077)$	$0.896_{\pm 0.013}(0.008)$	$0.976_{\pm 0.006}(0.047)$	$0.921_{\pm 0.017}(0.100)$	$0.999_{\pm 0.000}(0.121)$	$0.972_{\pm 0.004}(0.086)$	$0.081_{\pm 0.033}$
	0.15	$0.936_{\pm 0.004}(0.103)$	$0.854_{\pm 0.004}(0.007)$	$0.936_{\pm 0.004}(0.053)$	$0.867_{\pm 0.006}(0.039)$	$1.000_{\pm 0.000}(0.057)$	$0.985_{\pm 0.002}(0.051)$	$0.011_{\pm 0.002}$
	0.2	$0.859_{\pm 0.010}(0.077)$	$0.790_{\pm 0.010}(0.024)$	$0.859_{\pm 0.010}(0.047)$	$0.795_{\pm 0.011}(0.055)$	$1.000_{\pm 0.000}(0.036)$	$0.993_{\pm 0.001}(0.035)$	$0.001_{\pm 0.000}$
RL	0.05	$0.976_{\pm 0.001}(0.022)$	$0.949_{\pm 0.002}(0.002)$	$1.973_{\pm 0.396}(0.686)$	$1.971_{\pm 0.406}(0.757)$	$0.508_{\pm 0.100}(0.234)$	$0.495_{\pm 0.098}(0.285)$	$0.899_{\pm 0.012}$
UA10.5%, **RA**93.9%, **TA**85.8%	0.1	$0.942_{\pm 0.011}(0.043)$	$0.907_{\pm 0.009}(0.003)$	$1.227_{\pm 0.103}(0.204)$	$1.235_{\pm 0.107}(0.214)$	$0.771_{\pm 0.064}(0.107)$	$0.738_{\pm 0.064}(0.147)$	$0.837_{\pm 0.016}$
	0.15	$0.891_{\pm 0.013}(0.058)$	$0.856_{\pm 0.012}(0.009)$	$1.009_{\pm 0.047}(0.125)$	$1.011_{\pm 0.045}(0.105)$	$0.884_{\pm 0.039}(0.059)$	$0.847_{\pm 0.037}(0.087)$	$0.770_{\pm 0.022}$
	0.2	$0.834_{\pm 0.003}(0.051)$	$0.799_{\pm 0.005}(0.016)$	$0.897_{\pm 0.026}(0.086)$	$0.893_{\pm 0.025}(0.043)$	$0.929_{\pm 0.024}(0.034)$	$0.895_{\pm 0.022}(0.063)$	$0.713_{\pm 0.028}$
GA	0.05	$0.996_{\pm 0.000}(0.041)$	$0.945_{\pm 0.008}(0.002)$	$1.003_{\pm 0.007}(0.284)$	$1.005_{\pm 0.007}(0.209)$	$1.050_{\pm 0.007}(0.308)$	$0.945_{\pm 0.007}(0.165)$	$0.616_{\pm 0.008}$
UA0.6%, **RA**99.5%, **TA**94.3%	0.1	$0.985_{\pm 0.006}(0.087)$	$0.902_{\pm 0.009}(0.002)$	$0.989_{\pm 0.006}(0.034)$	$0.926_{\pm 0.006}(0.095)$	$1.095_{\pm 0.004}(0.217)$	$0.916_{\pm 0.006}(0.030)$	$0.057_{\pm 0.005}$
	0.15	$0.966_{\pm 0.006}(0.133)$	$0.848_{\pm 0.007}(0.001)$	$0.966_{\pm 0.002}(0.083)$	$0.857_{\pm 0.009}(0.049)$	$1.141_{\pm 0.001}(0.198)$	$0.879_{\pm 0.006}(0.055)$	$0.005_{\pm 0.007}$
	0.2	$0.929_{\pm 0.004}(0.147)$	$0.809_{\pm 0.007}(0.005)$	$0.932_{\pm 0.000}(0.120)$	$0.817_{\pm 0.005}(0.033)$	$1.150_{\pm 0.002}(0.186)$	$0.871_{\pm 0.001}(0.087)$	$0.001_{\pm 0.007}$
Teacher	0.05	$0.985_{\pm 0.015}(0.030)$	$0.944_{\pm 0.018}(0.003)$	$1.066_{\pm 0.003}(0.221)$	$1.143_{\pm 0.012}(0.071)$	$0.923_{\pm 0.010}(0.181)$	$0.823_{\pm 0.017}(0.043)$	$0.857_{\pm 0.013}$
UA1.6%, **RA**98.3%, **TA**91.7%	0.1	$0.949_{\pm 0.012}(0.051)$	$0.909_{\pm 0.016}(0.005)$	$0.970_{\pm 0.006}(0.053)$	$0.986_{\pm 0.014}(0.035)$	$0.980_{\pm 0.001}(0.102)$	$0.918_{\pm 0.009}(0.032)$	$0.834_{\pm 0.005}$
	0.15	$0.885_{\pm 0.010}(0.052)$	$0.849_{\pm 0.018}(0.002)$	$0.894_{\pm 0.017}(0.011)$	$0.893_{\pm 0.010}(0.013)$	$0.992_{\pm 0.002}(0.049)$	$0.950_{\pm 0.013}(0.016)$	$0.813_{\pm 0.013}$
	0.2	$0.818_{\pm 0.014}(0.036)$	$0.798_{\pm 0.014}(0.016)$	$0.823_{\pm 0.009}(0.011)$	$0.826_{\pm 0.002}(0.024)$	$0.997_{\pm 0.015}(0.033)$	$0.971_{\pm 0.007}(0.013)$	$0.793_{\pm 0.012}$
FF	0.05	$0.972_{\pm 0.006}(0.017)$	$0.954_{\pm 0.002}(0.006)$	$8.023_{\pm 0.189}(6.736)$	$7.461_{\pm 0.019}(6.247)$	$0.121_{\pm 0.002}(0.621)$	$0.128_{\pm 0.000}(0.652)$	$0.999_{\pm 0.000}$
UA60.0%, **RA**40.1%, **TA**40.6%	0.1	$0.930_{\pm 0.020}(0.032)$	$0.897_{\pm 0.003}(0.007)$	$7.091_{\pm 0.151}(6.068)$	$6.521_{\pm 0.171}(5.501)$	$0.131_{\pm 0.000}(0.747)$	$0.138_{\pm 0.004}(0.748)$	$0.998_{\pm 0.001}$
	0.15	$0.887_{\pm 0.024}(0.054)$	$0.852_{\pm 0.006}(0.005)$	$6.402_{\pm 0.034}(5.519)$	$5.837_{\pm 0.438}(4.931)$	$0.139_{\pm 0.004}(0.804)$	$0.146_{\pm 0.010}(0.788)$	$0.996_{\pm 0.001}$
	0.2	$0.840_{\pm 0.046}(0.058)$	$0.803_{\pm 0.015}(0.012)$	$5.805_{\pm 0.042}(4.994)$	$5.253_{\pm 0.376}(4.403)$	$0.145_{\pm 0.007}(0.819)$	$0.153_{\pm 0.014}(0.804)$	$0.993_{\pm 0.003}$
SSD	0.05	$0.993_{\pm 0.005}(0.038)$	$0.944_{\pm 0.011}(0.003)$	$0.999_{\pm 0.007}(0.288)$	$1.001_{\pm 0.009}(0.213)$	$0.995_{\pm 0.009}(0.253)$	$0.941_{\pm 0.013}(0.161)$	$0.585_{\pm 0.014}$
UA0.5%, **RA**99.5%, **TA**94.3%	0.1	$0.991_{\pm 0.015}(0.093)$	$0.904_{\pm 0.014}(0.000)$	$0.991_{\pm 0.001}(0.032)$	$0.929_{\pm 0.011}(0.092)$	$1.000_{\pm 0.011}(0.122)$	$0.975_{\pm 0.010}(0.089)$	$0.060_{\pm 0.011}$
	0.15	$0.964_{\pm 0.016}(0.131)$	$0.850_{\pm 0.011}(0.003)$	$0.967_{\pm 0.009}(0.084)$	$0.860_{\pm 0.014}(0.046)$	$1.000_{\pm 0.001}(0.057)$	$0.988_{\pm 0.003}(0.054)$	$0.005_{\pm 0.010}$
	0.2	$0.930_{\pm 0.018}(0.148)$	$0.807_{\pm 0.002}(0.007)$	$0.929_{\pm 0.002}(0.117)$	$0.814_{\pm 0.017}(0.036)$	$1.000_{\pm 0.003}(0.036)$	$0.992_{\pm 0.001}(0.034)$	$0.002_{\pm 0.005}$
NegGrad+	0.05	$0.986_{\pm 0.000}(0.031)$	$0.949_{\pm 0.001}(0.001)$	$1.039_{\pm 0.008}(0.248)$	$1.062_{\pm 0.011}(0.152)$	$0.949_{\pm 0.008}(0.207)$	$0.893_{\pm 0.008}(0.113)$	$0.855_{\pm 0.028}$
UA2.8%, **RA**99.6%, **TA**92.9%	0.1	$0.951_{\pm 0.005}(0.053)$	$0.903_{\pm 0.004}(0.001)$	$0.964_{\pm 0.008}(0.059)$	$0.944_{\pm 0.010}(0.076)$	$0.987_{\pm 0.003}(0.109)$	$0.956_{\pm 0.007}(0.070)$	$0.177_{\pm 0.055}$
	0.15	$0.889_{\pm 0.004}(0.056)$	$0.845_{\pm 0.003}(0.002)$	$0.892_{\pm 0.004}(0.009)$	$0.861_{\pm 0.003}(0.045)$	$0.996_{\pm 0.000}(0.053)$	$0.981_{\pm 0.001}(0.047)$	$0.012_{\pm 0.002}$
	0.2	$0.825_{\pm 0.003}(0.043)$	$0.796_{\pm 0.004}(0.018)$	$0.827_{\pm 0.003}(0.015)$	$0.805_{\pm 0.004}(0.045)$	$0.999_{\pm 0.000}(0.035)$	$0.989_{\pm 0.000}(0.032)$	$0.002_{\pm 0.000}$
Salun	0.05	$0.988_{\pm 0.001}(0.034)$	$0.951_{\pm 0.003}(0.004)$	$1.314_{\pm 0.113}(0.027)$	$1.381_{\pm 0.121}(0.167)$	$0.756_{\pm 0.064}(0.014)$	$0.692_{\pm 0.058}(0.088)$	$0.871_{\pm 0.013}$
UA4.3%, **RA**97.7%, **TA**89.4%	0.1	$0.956_{\pm 0.003}(0.058)$	$0.897_{\pm 0.005}(0.007)$	$1.015_{\pm 0.003}(0.008)$	$1.021_{\pm 0.001}(0.001)$	$0.941_{\pm 0.006}(0.064)$	$0.878_{\pm 0.004}(0.007)$	$0.776_{\pm 0.002}$
	0.15	$0.910_{\pm 0.005}(0.078)$	$0.847_{\pm 0.006}(0.000)$	$0.937_{\pm 0.009}(0.054)$	$0.916_{\pm 0.008}(0.010)$	$0.972_{\pm 0.004}(0.029)$	$0.924_{\pm 0.003}(0.010)$	$0.714_{\pm 0.010}$
	0.2	$0.856_{\pm 0.008}(0.074)$	$0.796_{\pm 0.010}(0.019)$	$0.872_{\pm 0.008}(0.060)$	$0.844_{\pm 0.008}(0.006)$	$0.982_{\pm 0.003}(0.019)$	$0.943_{\pm 0.004}(0.015)$	$0.669_{\pm 0.008}$
SFRon	0.05	$0.977_{\pm 0.003}(0.022)$	$0.953_{\pm 0.004}(0.006)$	$1.100_{\pm 0.023}(0.188)$	$1.143_{\pm 0.021}(0.071)$	$0.889_{\pm 0.015}(0.147)$	$0.834_{\pm 0.012}(0.054)$	$0.926_{\pm 0.018}$
UA4.0%, **RA**97.3%, **TA**91.6%	0.1	$0.945_{\pm 0.004}(0.047)$	$0.905_{\pm 0.005}(0.001)$	$0.986_{\pm 0.005}(0.037)$	$0.977_{\pm 0.008}(0.044)$	$0.958_{\pm 0.001}(0.081)$	$0.927_{\pm 0.003}(0.042)$	$0.435_{\pm 0.043}$
	0.15	$0.895_{\pm 0.002}(0.062)$	$0.847_{\pm 0.002}(0.000)$	$0.912_{\pm 0.004}(0.029)$	$0.879_{\pm 0.001}(0.027)$	$0.982_{\pm 0.002}(0.039)$	$0.963_{\pm 0.003}(0.029)$	$0.082_{\pm 0.007}$
	0.2	$0.857_{\pm 0.008}(0.075)$	$0.808_{\pm 0.002}(0.006)$	$0.868_{\pm 0.007}(0.056)$	$0.826_{\pm 0.005}(0.024)$	$0.988_{\pm 0.002}(0.024)$	$0.978_{\pm 0.004}(0.020)$	$0.025_{\pm 0.005}$

Table 11: Unlearning performance of 10 unlearning methods on **CIFAR-10** with **ResNet18** in **class-wise forgetting** scenario.

Methods	α	Coverage $\mathcal{D}_f\downarrow$	Coverage $\mathcal{D}_{tf}\downarrow$	Coverage $\mathcal{D}_{tr}\uparrow$	Set Size $\mathcal{D}_f\uparrow$	Set Size $\mathcal{D}_{tf}\uparrow$	Set Size $\mathcal{D}_{tr}\downarrow$	CR $\mathcal{D}_f\downarrow$	CR $\mathcal{D}_{tf}\downarrow$	CR $\mathcal{D}_{tr}\uparrow$	$\hat{q}_f$	$\hat{q}_{test}$
RT	0.05	$1.000_{\pm0.001}(0.000)$	$1.000_{\pm0.001}(0.000)$	$0.964_{\pm0.008}(0.000)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$1.148_{\pm0.013}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.840_{\pm0.002}(0.000)$	$1.000_{\pm0.000}$	$0.982_{\pm0.003}$
UA100%, **UA**$_{tf}$100%,	0.1	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.001}(0.000)$	$0.882_{\pm0.011}(0.000)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.922_{\pm0.009}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.001}(0.000)$	$0.956_{\pm0.007}(0.000)$	$1.000_{\pm0.001}$	$0.080_{\pm0.003}$
RA99.9%, **TA**92.4%	0.15	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.856_{\pm0.012}(0.000)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.882_{\pm0.007}(0.000)$	$0.100_{\pm0.001}(0.000)$	$0.100_{\pm0.001}(0.000)$	$0.970_{\pm0.004}(0.000)$	$1.000_{\pm0.000}$	$0.018_{\pm0.010}$
	0.2	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.814_{\pm0.010}(0.000)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.830_{\pm0.001}(0.000)$	$0.100_{\pm0.001}(0.000)$	$0.100_{\pm0.001}(0.000)$	$0.981_{\pm0.002}(0.000)$	$1.000_{\pm0.000}$	$0.003_{\pm0.001}$
FT	0.05	$0.994_{\pm0.003}(0.006)$	$0.962_{\pm0.022}(0.038)$	$0.944_{\pm0.011}(0.020)$	$9.854_{\pm0.127}(0.146)$	$9.403_{\pm0.501}(0.597)$	$1.045_{\pm0.040}(0.103)$	$0.101_{\pm0.001}(0.001)$	$0.102_{\pm0.003}(0.002)$	$0.904_{\pm0.028}(0.065)$	$1.000_{\pm0.000}$	$0.731_{\pm0.166}$
UA100%, **UA**$_{tf}$100%,	0.1	$0.969_{\pm0.011}(0.031)$	$0.882_{\pm0.020}(0.118)$	$0.908_{\pm0.010}(0.026)$	$9.495_{\pm0.255}(0.505)$	$8.528_{\pm0.571}(1.472)$	$0.956_{\pm0.006}(0.034)$	$0.102_{\pm0.002}(0.002)$	$0.104_{\pm0.005}(0.004)$	$0.950_{\pm0.007}(0.006)$	$1.000_{\pm0.000}$	$0.314_{\pm0.010}$
RA96.7%, **TA**90.8%	0.15	$0.951_{\pm0.014}(0.049)$	$0.840_{\pm0.011}(0.160)$	$0.851_{\pm0.031}(0.005)$	$9.265_{\pm0.279}(0.735)$	$8.131_{\pm0.523}(1.869)$	$0.872_{\pm0.039}(0.010)$	$0.103_{\pm0.003}(0.003)$	$0.103_{\pm0.007}(0.003)$	$0.976_{\pm0.009}(0.006)$	$1.000_{\pm0.000}$	$0.073_{\pm0.054}$
	0.2	$0.942_{\pm0.014}(0.058)$	$0.818_{\pm0.072}(0.182)$	$0.838_{\pm0.016}(0.023)$	$9.163_{\pm0.245}(0.837)$	$7.934_{\pm0.533}(2.066)$	$0.854_{\pm0.019}(0.024)$	$0.103_{\pm0.003}(0.003)$	$0.103_{\pm0.010}(0.003)$	$0.981_{\pm0.005}(0.000)$	$1.000_{\pm0.000}$	$0.039_{\pm0.017}$
RL	0.05	$0.995_{\pm0.002}(0.005)$	$0.954_{\pm0.009}(0.046)$	$0.959_{\pm0.015}(0.005)$	$9.993_{\pm0.003}(0.007)$	$9.900_{\pm0.011}(0.100)$	$1.170_{\pm0.155}(0.022)$	$0.100_{\pm0.000}(0.000)$	$0.096_{\pm0.001}(0.004)$	$0.828_{\pm0.097}(0.012)$	$1.000_{\pm0.000}$	$0.870_{\pm0.145}$
UA100%, **UA**$_{tf}$100%,	0.1	$0.984_{\pm0.003}(0.016)$	$0.907_{\pm0.015}(0.093)$	$0.918_{\pm0.021}(0.036)$	$9.978_{\pm0.004}(0.022)$	$9.800_{\pm0.019}(0.200)$	$0.982_{\pm0.036}(0.059)$	$0.099_{\pm0.000}(0.001)$	$0.093_{\pm0.002}(0.007)$	$0.936_{\pm0.022}(0.021)$	$1.000_{\pm0.000}$	$0.469_{\pm0.250}$
RA98.0%, **TA**92.7%	0.15	$0.961_{\pm0.009}(0.039)$	$0.859_{\pm0.014}(0.141)$	$0.870_{\pm0.019}(0.014)$	$9.950_{\pm0.017}(0.050)$	$9.700_{\pm0.066}(0.300)$	$0.904_{\pm0.045}(0.021)$	$0.097_{\pm0.001}(0.003)$	$0.089_{\pm0.001}(0.011)$	$0.964_{\pm0.027}(0.006)$	$1.000_{\pm0.000}$	$0.144_{\pm0.163}$
	0.2	$0.935_{\pm0.027}(0.065)$	$0.815_{\pm0.012}(0.185)$	$0.804_{\pm0.016}(0.010)$	$9.919_{\pm0.035}(0.081)$	$9.637_{\pm0.076}(0.363)$	$0.820_{\pm0.026}(0.010)$	$0.094_{\pm0.002}(0.006)$	$0.085_{\pm0.001}(0.015)$	$0.981_{\pm0.012}(0.000)$	$0.999_{\pm0.001}$	$0.014_{\pm0.013}$
GA	0.05	$1.000_{\pm0.003}(0.000)$	$1.000_{\pm0.005}(0.000)$	$0.948_{\pm0.004}(0.016)$	$10.000_{\pm0.009}(0.000)$	$10.000_{\pm0.003}(0.000)$	$1.204_{\pm0.002}(0.056)$	$0.100_{\pm0.007}(0.000)$	$0.100_{\pm0.011}(0.000)$	$0.787_{\pm0.011}(0.053)$	$1.000_{\pm0.010}$	$0.988_{\pm0.000}$
UA84.6%, **UA**$_{tf}$82.5%,	0.1	$1.000_{\pm0.003}(0.000)$	$1.000_{\pm0.010}(0.000)$	$0.899_{\pm0.008}(0.017)$	$10.000_{\pm0.005}(0.000)$	$10.000_{\pm0.006}(0.000)$	$1.005_{\pm0.003}(0.083)$	$0.100_{\pm0.012}(0.000)$	$0.100_{\pm0.006}(0.000)$	$0.894_{\pm0.002}(0.062)$	$1.000_{\pm0.000}$	$0.562_{\pm0.003}$
RA96.4%, **TA**89.6%	0.15	$1.000_{\pm0.006}(0.000)$	$1.000_{\pm0.001}(0.000)$	$0.843_{\pm0.011}(0.013)$	$10.000_{\pm0.005}(0.000)$	$10.000_{\pm0.006}(0.000)$	$0.893_{\pm0.010}(0.011)$	$0.100_{\pm0.004}(0.000)$	$0.100_{\pm0.008}(0.000)$	$0.944_{\pm0.007}(0.026)$	$1.000_{\pm0.001}$	$0.051_{\pm0.002}$
	0.2	$0.828_{\pm0.003}(0.172)$	$0.782_{\pm0.011}(0.218)$	$0.838_{\pm0.010}(0.024)$	$9.550_{\pm0.007}(0.450)$	$9.366_{\pm0.002}(0.634)$	$0.884_{\pm0.000}(0.054)$	$0.087_{\pm0.008}(0.013)$	$0.084_{\pm0.005}(0.016)$	$0.948_{\pm0.010}(0.033)$	$1.000_{\pm0.002}$	$0.038_{\pm0.003}$
Teacher	0.05	$0.994_{\pm0.003}(0.006)$	$0.959_{\pm0.002}(0.041)$	$0.939_{\pm0.003}(0.025)$	$9.877_{\pm0.000}(0.123)$	$9.502_{\pm0.003}(0.498)$	$1.000_{\pm0.004}(0.148)$	$0.101_{\pm0.004}(0.001)$	$0.101_{\pm0.004}(0.001)$	$0.939_{\pm0.001}(0.099)$	$0.955_{\pm0.005}$	$0.588_{\pm0.004}$
UA90.1%, **UA**$_{tf}$86.5%,	0.1	$0.931_{\pm0.000}(0.069)$	$0.904_{\pm0.001}(0.096)$	$0.890_{\pm0.001}(0.008)$	$9.199_{\pm0.002}(0.801)$	$8.604_{\pm0.004}(1.396)$	$0.914_{\pm0.004}(0.008)$	$0.101_{\pm0.004}(0.001)$	$0.105_{\pm0.004}(0.005)$	$0.974_{\pm0.003}(0.018)$	$0.926_{\pm0.004}$	$0.116_{\pm0.005}$
RA99.5%, **TA**94.0%	0.15	$0.879_{\pm0.004}(0.121)$	$0.881_{\pm0.001}(0.119)$	$0.834_{\pm0.001}(0.022)$	$8.730_{\pm0.002}(1.270)$	$8.081_{\pm0.001}(1.919)$	$0.845_{\pm0.005}(0.037)$	$0.101_{\pm0.004}(0.001)$	$0.109_{\pm0.002}(0.009)$	$0.986_{\pm0.004}(0.016)$	$0.921_{\pm0.001}$	$0.017_{\pm0.002}$
	0.2	$0.809_{\pm0.004}(0.191)$	$0.841_{\pm0.004}(0.159)$	$0.816_{\pm0.000}(0.002)$	$8.141_{\pm0.003}(1.859)$	$7.525_{\pm0.003}(2.475)$	$0.824_{\pm0.003}(0.006)$	$0.099_{\pm0.002}(0.001)$	$0.112_{\pm0.003}(0.012)$	$0.990_{\pm0.002}(0.009)$	$0.916_{\pm0.005}$	$0.010_{\pm0.003}$
FF	0.05	$0.984_{\pm0.005}(0.016)$	$0.962_{\pm0.004}(0.038)$	$0.950_{\pm0.002}(0.015)$	$7.760_{\pm1.386}(2.240)$	$7.479_{\pm1.223}(2.521)$	$7.627_{\pm0.058}(6.479)$	$0.129_{\pm0.022}(0.029)$	$0.130_{\pm0.021}(0.030)$	$0.125_{\pm0.001}(0.715)$	$0.999_{\pm0.000}$	$0.997_{\pm0.003}$
UA100%, **UA**$_{tf}$100%,	0.1	$0.964_{\pm0.013}(0.036)$	$0.917_{\pm0.037}(0.083)$	$0.909_{\pm0.006}(0.027)$	$7.360_{\pm0.999}(2.640)$	$6.988_{\pm0.749}(3.012)$	$6.853_{\pm0.390}(5.930)$	$0.132_{\pm0.020}(0.032)$	$0.132_{\pm0.019}(0.032)$	$0.133_{\pm0.007}(0.823)$	$0.998_{\pm0.000}$	$0.996_{\pm0.003}$
RA34.3%, **TA**36.1%	0.15	$0.922_{\pm0.006}(0.078)$	$0.852_{\pm0.015}(0.148)$	$0.863_{\pm0.017}(0.007)$	$6.941_{\pm1.088}(3.059)$	$6.562_{\pm0.856}(3.438)$	$6.278_{\pm0.232}(5.395)$	$0.134_{\pm0.020}(0.034)$	$0.131_{\pm0.015}(0.031)$	$0.138_{\pm0.008}(0.832)$	$0.997_{\pm0.001}$	$0.994_{\pm0.006}$
	0.2	$0.897_{\pm0.001}(0.103)$	$0.818_{\pm0.020}(0.182)$	$0.789_{\pm0.015}(0.025)$	$6.757_{\pm0.978}(3.243)$	$6.352_{\pm0.757}(3.648)$	$5.307_{\pm0.527}(4.477)$	$0.134_{\pm0.019}(0.034)$	$0.130_{\pm0.012}(0.030)$	$0.150_{\pm0.018}(0.832)$	$0.993_{\pm0.002}$	$0.993_{\pm0.006}$
SSD	0.05	$0.995_{\pm0.014}(0.005)$	$0.935_{\pm0.013}(0.065)$	$0.940_{\pm0.007}(0.024)$	$1.030_{\pm0.014}(8.970)$	$1.067_{\pm0.013}(8.933)$	$0.991_{\pm0.011}(0.157)$	$0.966_{\pm0.010}(0.866)$	$0.876_{\pm0.007}(0.776)$	$0.949_{\pm0.010}(0.109)$	$0.804_{\pm0.015}$	$0.447_{\pm0.007}$
UA1.16%, **UA**$_{tf}$7.75%,	0.1	$0.984_{\pm0.021}(0.016)$	$0.910_{\pm0.009}(0.090)$	$0.880_{\pm0.001}(0.002)$	$0.992_{\pm0.011}(9.008)$	$0.982_{\pm0.005}(9.018)$	$0.896_{\pm0.003}(0.026)$	$0.992_{\pm0.003}(0.892)$	$0.926_{\pm0.017}(0.826)$	$0.981_{\pm0.012}(0.025)$	$0.434_{\pm0.007}$	$0.022_{\pm0.005}$
RA99.5%, **TA**94.3%	0.15	$0.960_{\pm0.012}(0.040)$	$0.876_{\pm0.011}(0.124)$	$0.847_{\pm0.007}(0.009)$	$0.962_{\pm0.007}(9.038)$	$0.931_{\pm0.006}(9.069)$	$0.857_{\pm0.013}(0.025)$	$0.998_{\pm0.016}(0.898)$	$0.941_{\pm0.002}(0.841)$	$0.989_{\pm0.002}(0.019)$	$0.215_{\pm0.007}$	$0.005_{\pm0.017}$
	0.2	$0.895_{\pm0.020}(0.105)$	$0.816_{\pm0.010}(0.184)$	$0.823_{\pm0.015}(0.009)$	$0.895_{\pm0.014}(9.105)$	$0.850_{\pm0.004}(9.150)$	$0.831_{\pm0.002}(0.001)$	$0.999_{\pm0.001}(0.899)$	$0.960_{\pm0.014}(0.860)$	$0.991_{\pm0.003}(0.010)$	$0.078_{\pm0.003}$	$0.002_{\pm0.009}$
NegGrad+	0.05	$0.989_{\pm0.016}(0.011)$	$0.961_{\pm0.056}(0.039)$	$0.945_{\pm0.027}(0.019)$	$9.432_{\pm0.803}(0.568)$	$9.038_{\pm1.360}(0.962)$	$1.053_{\pm0.020}(0.096)$	$0.105_{\pm0.007}(0.005)$	$0.107_{\pm0.010}(0.007)$	$0.897_{\pm0.008}(0.058)$	$1.000_{\pm0.000}$	$0.835_{\pm0.085}$
UA96.2%, **UA**$_{tf}$95.2%,	0.1	$0.980_{\pm0.029}(0.020)$	$0.954_{\pm0.065}(0.046)$	$0.881_{\pm0.028}(0.001)$	$9.250_{\pm1.061}(0.750)$	$8.836_{\pm1.647}(1.164)$	$0.913_{\pm0.018}(0.009)$	$0.106_{\pm0.009}(0.006)$	$0.109_{\pm0.013}(0.009)$	$0.965_{\pm0.012}(0.009)$	$1.000_{\pm0.000}$	$0.057_{\pm0.021}$
RA97.6%, **TA**92.8%	0.15	$0.952_{\pm0.068}(0.048)$	$0.908_{\pm0.130}(0.092)$	$0.849_{\pm0.026}(0.007)$	$8.600_{\pm1.980}(1.400)$	$8.077_{\pm2.719}(1.923)$	$0.868_{\pm0.016}(0.014)$	$0.113_{\pm0.018}(0.013)$	$0.116_{\pm0.023}(0.016)$	$0.977_{\pm0.012}(0.007)$	$1.000_{\pm0.000}$	$0.012_{\pm0.003}$
	0.2	$0.958_{\pm0.066}(0.042)$	$0.921_{\pm0.111}(0.079)$	$0.814_{\pm0.007}(0.001)$	$8.673_{\pm1.876}(1.327)$	$8.219_{\pm2.519}(1.781)$	$0.828_{\pm0.020}(0.002)$	$0.112_{\pm0.017}(0.012)$	$0.115_{\pm0.022}(0.015)$	$0.983_{\pm0.015}(0.001)$	$1.000_{\pm0.000}$	$0.004_{\pm0.003}$
Salun	0.05	$0.996_{\pm0.001}(0.004)$	$0.941_{\pm0.008}(0.059)$	$0.952_{\pm0.001}(0.012)$	$9.996_{\pm0.002}(0.004)$	$9.892_{\pm0.003}(0.108)$	$1.028_{\pm0.008}(0.121)$	$0.100_{\pm0.000}(0.000)$	$0.095_{\pm0.001}(0.005)$	$0.926_{\pm0.008}(0.087)$	$1.000_{\pm0.000}$	$0.785_{\pm0.049}$
UA100%, **UA**$_{tf}$100%,	0.1	$0.988_{\pm0.004}(0.012)$	$0.906_{\pm0.011}(0.094)$	$0.901_{\pm0.002}(0.020)$	$9.985_{\pm0.003}(0.015)$	$9.817_{\pm0.045}(0.183)$	$0.928_{\pm0.006}(0.006)$	$0.099_{\pm0.000}(0.001)$	$0.092_{\pm0.001}(0.008)$	$0.971_{\pm0.004}(0.015)$	$1.000_{\pm0.000}$	$0.042_{\pm0.011}$
RA99.6%, **TA**94.3%	0.15	$0.960_{\pm0.003}(0.040)$	$0.851_{\pm0.005}(0.149)$	$0.878_{\pm0.006}(0.022)$	$9.952_{\pm0.000}(0.048)$	$9.677_{\pm0.088}(0.323)$	$0.896_{\pm0.005}(0.013)$	$0.096_{\pm0.000}(0.004)$	$0.088_{\pm0.000}(0.012)$	$0.980_{\pm0.001}(0.010)$	$1.000_{\pm0.000}$	$0.009_{\pm0.001}$
	0.2	$0.915_{\pm0.019}(0.085)$	$0.807_{\pm0.038}(0.193)$	$0.820_{\pm0.035}(0.005)$	$9.893_{\pm0.024}(0.107)$	$9.511_{\pm0.192}(0.489)$	$0.828_{\pm0.039}(0.002)$	$0.092_{\pm0.002}(0.008)$	$0.085_{\pm0.002}(0.015)$	$0.990_{\pm0.004}(0.009)$	$1.000_{\pm0.000}$	$0.001_{\pm0.001}$
SFRon	0.05	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.952_{\pm0.005}(0.013)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$1.022_{\pm0.030}(0.127)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.932_{\pm0.024}(0.092)$	$1.000_{\pm0.000}$	$0.677_{\pm0.206}$
UA100%, **UA**$_{tf}$100%,	0.1	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.908_{\pm0.013}(0.026)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.937_{\pm0.028}(0.014)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.970_{\pm0.015}(0.014)$	$1.000_{\pm0.000}$	$0.089_{\pm0.092}$
RA99.3%, **TA**94.4%	0.15	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.840_{\pm0.026}(0.016)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.849_{\pm0.036}(0.033)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.989_{\pm0.003}(0.019)$	$1.000_{\pm0.000}$	$0.002_{\pm0.001}$
	0.2	$1.000_{\pm0.000}(0.000)$	$1.000_{\pm0.000}(0.000)$	$0.807_{\pm0.024}(0.008)$	$10.000_{\pm0.000}(0.000)$	$10.000_{\pm0.000}(0.000)$	$0.813_{\pm0.025}(0.017)$	$0.100_{\pm0.000}(0.000)$	$0.100_{\pm0.000}(0.000)$	$0.992_{\pm0.003}(0.010)$	$1.000_{\pm0.000}$	$0.001_{\pm0.001}$

Table 12: Unlearning performance of 9 unlearning methods on **Tiny ImageNet** with **ViT** in 10% **random data forgetting** scenario.

Methods	α	Coverage $\mathcal{D}_f\downarrow$	Coverage $\mathcal{D}_{test}\uparrow$	Set Size $\mathcal{D}_f\uparrow$	Set Size $\mathcal{D}_{test}\downarrow$	CR $\mathcal{D}_f\downarrow$	CR $\mathcal{D}_{test}\uparrow$	$\hat{q}$
RT	0.05	$0.944_{\pm0.006}(0.000)$	$0.949_{\pm0.026}(0.000)$	$1.876_{\pm0.009}(0.000)$	$1.840_{\pm0.014}(0.000)$	$0.503_{\pm0.018}(0.000)$	$0.516_{\pm0.018}(0.000)$	$0.984_{\pm0.002}$
	0.1	$0.892_{\pm0.006}(0.000)$	$0.900_{\pm0.025}(0.000)$	$1.151_{\pm0.002}(0.000)$	$1.144_{\pm0.018}(0.000)$	$0.775_{\pm0.016}(0.000)$	$0.786_{\pm0.026}(0.000)$	$0.853_{\pm0.003}$
UA14.7%, **RA**98.8%, **TA**86.0%	0.15	$0.841_{\pm0.024}(0.000)$	$0.850_{\pm0.017}(0.000)$	$0.956_{\pm0.014}(0.000)$	$0.956_{\pm0.017}(0.000)$	$0.880_{\pm0.014}(0.000)$	$0.889_{\pm0.019}(0.000)$	$0.539_{\pm0.001}$
	0.2	$0.790_{\pm0.015}(0.000)$	$0.799_{\pm0.023}(0.000)$	$0.846_{\pm0.004}(0.000)$	$0.854_{\pm0.014}(0.000)$	$0.934_{\pm0.012}(0.000)$	$0.935_{\pm0.015}(0.000)$	$0.238_{\pm0.012}$
FT	0.05	$0.994_{\pm0.005}(0.050)$	$0.950_{\pm0.019}(0.001)$	$2.133_{\pm0.008}(0.257)$	$2.440_{\pm0.011}(0.600)$	$0.466_{\pm0.009}(0.037)$	$0.389_{\pm0.016}(0.127)$	$0.994_{\pm0.020}$
	0.1	$0.978_{\pm0.007}(0.086)$	$0.903_{\pm0.003}(0.003)$	$1.234_{\pm0.010}(0.083)$	$1.317_{\pm0.001}(0.173)$	$0.792_{\pm0.018}(0.017)$	$0.685_{\pm0.001}(0.101)$	$0.935_{\pm0.012}$
UA6.9%, **RA**97.9%, **TA**84.1%	0.15	$0.938_{\pm0.001}(0.097)$	$0.851_{\pm0.010}(0.001)$	$1.014_{\pm0.005}(0.058)$	$1.017_{\pm0.016}(0.061)$	$0.925_{\pm0.007}(0.045)$	$0.836_{\pm0.016}(0.053)$	$0.681_{\pm0.003}$
	0.2	$0.888_{\pm0.009}(0.098)$	$0.801_{\pm0.012}(0.002)$	$0.915_{\pm0.006}(0.069)$	$0.885_{\pm0.000}(0.031)$	$0.970_{\pm0.020}(0.036)$	$0.905_{\pm0.005}(0.030)$	$0.326_{\pm0.011}$
RL	0.05	$0.969_{\pm0.021}(0.025)$	$0.952_{\pm0.008}(0.003)$	$17.890_{\pm0.003}(16.014)$	$8.572_{\pm0.010}(6.732)$	$0.054_{\pm0.013}(0.449)$	$0.111_{\pm0.002}(0.405)$	$0.996_{\pm0.019}$
	0.1	$0.892_{\pm0.017}(0.000)$	$0.902_{\pm0.013}(0.002)$	$2.639_{\pm0.017}(1.488)$	$1.843_{\pm0.019}(0.699)$	$0.338_{\pm0.022}(0.437)$	$0.489_{\pm0.013}(0.297)$	$0.971_{\pm0.014}$
UA26.9%, **RA**96.0%, **TA**81.4%	0.15	$0.793_{\pm0.021}(0.048)$	$0.855_{\pm0.008}(0.005)$	$1.225_{\pm0.013}(0.269)$	$1.164_{\pm0.000}(0.208)$	$0.648_{\pm0.002}(0.232)$	$0.734_{\pm0.000}(0.155)$	$0.894_{\pm0.022}$
	0.2	$0.681_{\pm0.010}(0.109)$	$0.803_{\pm0.003}(0.004)$	$0.831_{\pm0.006}(0.015)$	$0.946_{\pm0.011}(0.092)$	$0.820_{\pm0.022}(0.114)$	$0.849_{\pm0.006}(0.086)$	$0.715_{\pm0.013}$
GA	0.05	$0.996_{\pm0.003}(0.052)$	$0.947_{\pm0.002}(0.002)$	$1.539_{\pm0.004}(0.337)$	$2.018_{\pm0.007}(0.178)$	$0.647_{\pm0.003}(0.144)$	$0.469_{\pm0.002}(0.047)$	$0.988_{\pm0.004}$
	0.1	$0.986_{\pm0.006}(0.094)$	$0.900_{\pm0.000}(0.000)$	$1.104_{\pm0.006}(0.047)$	$1.224_{\pm0.005}(0.080)$	$0.894_{\pm0.003}(0.119)$	$0.736_{\pm0.006}(0.050)$	$0.899_{\pm0.001}$
UA3.2%, **RA**97.4%, **TA**84.9%	0.15	$0.967_{\pm0.002}(0.126)$	$0.852_{\pm0.005}(0.002)$	$1.003_{\pm0.008}(0.047)$	$0.993_{\pm0.004}(0.037)$	$0.964_{\pm0.005}(0.084)$	$0.859_{\pm0.006}(0.030)$	$0.632_{\pm0.009}$
	0.2	$0.934_{\pm0.001}(0.144)$	$0.800_{\pm0.007}(0.001)$	$0.946_{\pm0.008}(0.100)$	$0.871_{\pm0.008}(0.017)$	$0.987_{\pm0.008}(0.053)$	$0.919_{\pm0.005}(0.016)$	$0.296_{\pm0.009}$
Teacher	0.05	$0.977_{\pm0.004}(0.033)$	$0.956_{\pm0.003}(0.007)$	$5.473_{\pm0.006}(3.597)$	$5.080_{\pm0.004}(3.240)$	$0.179_{\pm0.008}(0.324)$	$0.188_{\pm0.002}(0.328)$	$0.987_{\pm0.008}$
	0.1	$0.930_{\pm0.003}(0.038)$	$0.902_{\pm0.008}(0.002)$	$1.991_{\pm0.004}(0.840)$	$1.959_{\pm0.002}(0.815)$	$0.467_{\pm0.004}(0.308)$	$0.460_{\pm0.002}(0.326)$	$0.971_{\pm0.007}$
UA17.3%, **RA**86.7%, **TA**79.0%	0.15	$0.873_{\pm0.003}(0.032)$	$0.850_{\pm0.009}(0.000)$	$1.295_{\pm0.006}(0.339)$	$1.319_{\pm0.005}(0.363)$	$0.674_{\pm0.007}(0.206)$	$0.645_{\pm0.003}(0.244)$	$0.944_{\pm0.006}$
	0.2	$0.816_{\pm0.007}(0.026)$	$0.803_{\pm0.009}(0.004)$	$1.020_{\pm0.006}(0.174)$	$1.058_{\pm0.004}(0.204)$	$0.800_{\pm0.005}(0.134)$	$0.758_{\pm0.005}(0.177)$	$0.910_{\pm0.006}$
SSD	0.05	$0.998_{\pm0.004}(0.054)$	$0.950_{\pm0.006}(0.001)$	$1.354_{\pm0.008}(0.522)$	$1.827_{\pm0.002}(0.013)$	$0.737_{\pm0.008}(0.234)$	$0.520_{\pm0.008}(0.004)$	$0.985_{\pm0.005}$
	0.1	$0.993_{\pm0.008}(0.101)$	$0.897_{\pm0.008}(0.003)$	$1.039_{\pm0.002}(0.112)$	$1.134_{\pm0.008}(0.010)$	$0.956_{\pm0.007}(0.181)$	$0.791_{\pm0.002}(0.005)$	$0.852_{\pm0.001}$
UA1.5%, **RA**98.5%, **TA**86.1%	0.15	$0.981_{\pm0.005}(0.140)$	$0.853_{\pm0.001}(0.003)$	$0.993_{\pm0.001}(0.037)$	$0.962_{\pm0.005}(0.006)$	$0.988_{\pm0.004}(0.108)$	$0.887_{\pm0.004}(0.002)$	$0.542_{\pm0.007}$
	0.2	$0.956_{\pm0.002}(0.166)$	$0.805_{\pm0.003}(0.006)$	$0.960_{\pm0.003}(0.114)$	$0.864_{\pm0.009}(0.010)$	$0.996_{\pm0.005}(0.062)$	$0.932_{\pm0.002}(0.003)$	$0.249_{\pm0.006}$
NegGrad+	0.05	$0.999_{\pm0.000}(0.055)$	$0.890_{\pm0.002}(0.059)$	$0.949_{\pm0.002}(0.927)$	$1.614_{\pm0.023}(0.227)$	$2.184_{\pm0.052}(1.681)$	$2.499_{\pm0.059}(1.984)$	$0.995_{\pm0.000}$
	0.1	$0.995_{\pm0.001}(0.103)$	$0.848_{\pm0.000}(0.052)$	$0.898_{\pm0.000}(0.253)$	$1.093_{\pm0.005}(0.051)$	$1.225_{\pm0.007}(0.450)$	$1.287_{\pm0.003}(0.501)$	$0.933_{\pm0.002}$
UA19.4%, **RA**98.3%, **TA**84.0%	0.15	$0.987_{\pm0.000}(0.146)$	$0.814_{\pm0.001}(0.036)$	$0.850_{\pm0.001}(0.106)$	$1.009_{\pm0.000}(0.053)$	$1.017_{\pm0.002}(0.137)$	$1.023_{\pm0.003}(0.133)$	$0.685_{\pm0.002}$
	0.2	$0.966_{\pm0.001}(0.176)$	$0.783_{\pm0.003}(0.016)$	$0.802_{\pm0.002}(0.044)$	$0.972_{\pm0.000}(0.118)$	$0.922_{\pm0.004}(0.012)$	$0.891_{\pm0.001}(0.043)$	$0.320_{\pm0.001}$
Salun	0.05	$0.995_{\pm0.003}(0.051)$	$0.964_{\pm0.026}(0.015)$	$2.803_{\pm1.607}(0.927)$	$2.726_{\pm0.727}(0.886)$	$1.311_{\pm1.810}(0.808)$	$1.157_{\pm1.481}(0.641)$	$0.988_{\pm0.001}$
	0.1	$0.977_{\pm0.014}(0.085)$	$0.924_{\pm0.040}(0.024)$	$1.229_{\pm0.286}(0.078)$	$1.281_{\pm0.120}(0.137)$	$0.918_{\pm0.387}(0.143)$	$0.884_{\pm0.374}(0.097)$	$0.939_{\pm0.005}$
UA9.2%, **RA**97.7%, **TA**83.6%	0.15	$0.936_{\pm0.041}(0.095)$	$0.874_{\pm0.041}(0.024)$	$0.972_{\pm0.103}(0.016)$	$1.032_{\pm0.005}(0.076)$	$0.935_{\pm0.087}(0.055)$	$0.893_{\pm0.124}(0.004)$	$0.819_{\pm0.003}$
	0.2	$0.870_{\pm0.081}(0.080)$	$0.810_{\pm0.017}(0.011)$	$0.845_{\pm0.036}(0.001)$	$0.925_{\pm0.046}(0.071)$	$0.924_{\pm0.047}(0.009)$	$0.894_{\pm0.006}(0.041)$	$0.630_{\pm0.003}$
SFRon	0.05	$0.989_{\pm0.001}(0.045)$	$0.948_{\pm0.001}(0.001)$	$2.000_{\pm0.059}(0.124)$	$2.208_{\pm0.037}(0.368)$	$0.495_{\pm0.014}(0.008)$	$0.429_{\pm0.007}(0.086)$	$0.986_{\pm0.000}$
	0.1	$0.960_{\pm0.003}(0.068)$	$0.899_{\pm0.002}(0.001)$	$1.227_{\pm0.017}(0.076)$	$1.268_{\pm0.007}(0.123)$	$0.783_{\pm0.010}(0.008)$	$0.709_{\pm0.003}(0.077)$	$0.902_{\pm0.003}$
UA9.3%, **RA**97.0%, **TA**83.9%	0.15	$0.917_{\pm0.002}(0.076)$	$0.849_{\pm0.002}(0.001)$	$1.024_{\pm0.006}(0.068)$	$1.015_{\pm0.005}(0.059)$	$0.896_{\pm0.007}(0.016)$	$0.837_{\pm0.004}(0.053)$	$0.689_{\pm0.012}$
	0.2	$0.866_{\pm0.006}(0.076)$	$0.802_{\pm0.003}(0.003)$	$0.916_{\pm0.004}(0.070)$	$0.892_{\pm0.005}(0.037)$	$0.946_{\pm0.002}(0.012)$	$0.899_{\pm0.003}(0.036)$	$0.426_{\pm0.018}$

Table 13: Unlearning performance of 9 unlearning methods on **Tiny ImageNet** with **ViT** in **50% random data forgetting** scenario.

Methods	α	Coverage $\mathcal{D}_f \downarrow$	Coverage $\mathcal{D}_{test} \uparrow$	Set Size $\mathcal{D}_f \uparrow$	Set Size $\mathcal{D}_{test} \downarrow$	CR $\mathcal{D}_f \downarrow$	CR $\mathcal{D}_{test} \uparrow$	$\hat{q}$
RT	0.05	$0.946_{\pm 0.001}(0.000)$	$0.948_{\pm 0.003}(0.000)$	$2.146_{\pm 0.006}(0.000)$	$2.106_{\pm 0.002}(0.000)$	$0.441_{\pm 0.004}(0.000)$	$0.450_{\pm 0.005}(0.000)$	$0.987_{\pm 0.004}$
	0.1	$0.892_{\pm 0.007}(0.000)$	$0.899_{\pm 0.008}(0.000)$	$1.222_{\pm 0.002}(0.000)$	$1.211_{\pm 0.007}(0.000)$	$0.730_{\pm 0.004}(0.000)$	$0.742_{\pm 0.002}(0.000)$	$0.889_{\pm 0.009}$
UA16.0%, **RA**98.8%, **TA**84.9%	0.15	$0.838_{\pm 0.004}(0.000)$	$0.847_{\pm 0.001}(0.000)$	$0.977_{\pm 0.002}(0.000)$	$0.977_{\pm 0.006}(0.000)$	$0.858_{\pm 0.008}(0.000)$	$0.868_{\pm 0.006}(0.000)$	$0.607_{\pm 0.001}$
	0.2	$0.786_{\pm 0.005}(0.000)$	$0.796_{\pm 0.002}(0.000)$	$0.856_{\pm 0.007}(0.000)$	$0.863_{\pm 0.001}(0.000)$	$0.918_{\pm 0.007}(0.000)$	$0.922_{\pm 0.008}(0.000)$	$0.304_{\pm 0.008}$
FT	0.05	$0.995_{\pm 0.013}(0.051)$	$0.949_{\pm 0.024}(0.000)$	$1.879_{\pm 0.014}(0.003)$	$2.216_{\pm 0.003}(0.376)$	$0.527_{\pm 0.028}(0.024)$	$0.428_{\pm 0.020}(0.088)$	$0.992_{\pm 0.019}$
	0.1	$0.979_{\pm 0.021}(0.087)$	$0.901_{\pm 0.014}(0.001)$	$1.183_{\pm 0.018}(0.032)$	$1.281_{\pm 0.020}(0.137)$	$0.828_{\pm 0.029}(0.053)$	$0.701_{\pm 0.010}(0.085)$	$0.926_{\pm 0.025}$
UA5.4%, **RA**97.1%, **TA**84.4%	0.15	$0.953_{\pm 0.024}(0.112)$	$0.850_{\pm 0.022}(0.000)$	$1.014_{\pm 0.011}(0.058)$	$1.017_{\pm 0.026}(0.061)$	$0.940_{\pm 0.027}(0.060)$	$0.839_{\pm 0.004}(0.050)$	$0.681_{\pm 0.020}$
	0.2	$0.910_{\pm 0.029}(0.120)$	$0.806_{\pm 0.024}(0.007)$	$0.937_{\pm 0.018}(0.091)$	$0.895_{\pm 0.001}(0.041)$	$0.977_{\pm 0.029}(0.043)$	$0.902_{\pm 0.007}(0.033)$	$0.345_{\pm 0.016}$
RL	0.05	$0.974_{\pm 0.011}(0.028)$	$0.953_{\pm 0.001}(0.005)$	$26.032_{\pm 0.007}(23.886)$	$23.369_{\pm 0.008}(21.263)$	$0.038_{\pm 0.015}(0.403)$	$0.038_{\pm 0.016}(0.412)$	$0.994_{\pm 0.010}$
	0.1	$0.930_{\pm 0.016}(0.038)$	$0.902_{\pm 0.013}(0.003)$	$5.277_{\pm 0.001}(4.055)$	$4.621_{\pm 0.007}(3.410)$	$0.178_{\pm 0.011}(0.552)$	$0.197_{\pm 0.001}(0.545)$	$0.987_{\pm 0.008}$
UA22.5%, **RA**93.5%, **TA**77.1%	0.15	$0.875_{\pm 0.011}(0.037)$	$0.856_{\pm 0.008}(0.009)$	$1.758_{\pm 0.004}(0.781)$	$1.657_{\pm 0.005}(0.680)$	$0.496_{\pm 0.006}(0.362)$	$0.516_{\pm 0.009}(0.352)$	$0.970_{\pm 0.017}$
	0.2	$0.810_{\pm 0.006}(0.024)$	$0.805_{\pm 0.013}(0.009)$	$1.147_{\pm 0.005}(0.291)$	$1.144_{\pm 0.005}(0.281)$	$0.707_{\pm 0.004}(0.211)$	$0.707_{\pm 0.013}(0.215)$	$0.945_{\pm 0.005}$
GA	0.05	$0.998_{\pm 0.007}(0.052)$	$0.949_{\pm 0.001}(0.001)$	$1.807_{\pm 0.001}(0.339)$	$2.338_{\pm 0.001}(0.232)$	$0.552_{\pm 0.006}(0.111)$	$0.407_{\pm 0.006}(0.043)$	$0.992_{\pm 0.006}$
	0.1	$0.986_{\pm 0.009}(0.094)$	$0.896_{\pm 0.007}(0.003)$	$1.147_{\pm 0.003}(0.075)$	$1.278_{\pm 0.007}(0.067)$	$0.863_{\pm 0.008}(0.133)$	$0.703_{\pm 0.002}(0.039)$	$0.918_{\pm 0.010}$
UA3.9%, **RA**96.1%, **TA**84.2%	0.15	$0.968_{\pm 0.008}(0.130)$	$0.850_{\pm 0.002}(0.003)$	$1.015_{\pm 0.008}(0.038)$	$1.020_{\pm 0.002}(0.043)$	$0.954_{\pm 0.009}(0.096)$	$0.835_{\pm 0.002}(0.033)$	$0.696_{\pm 0.009}$
	0.2	$0.931_{\pm 0.011}(0.145)$	$0.804_{\pm 0.004}(0.008)$	$0.948_{\pm 0.000}(0.092)$	$0.893_{\pm 0.003}(0.030)$	$0.983_{\pm 0.006}(0.065)$	$0.900_{\pm 0.004}(0.022)$	$0.363_{\pm 0.002}$
Teacher	0.05	$0.967_{\pm 0.013}(0.021)$	$0.950_{\pm 0.017}(0.002)$	$6.465_{\pm 0.007}(4.319)$	$6.233_{\pm 0.004}(4.127)$	$0.151_{\pm 0.002}(0.290)$	$0.151_{\pm 0.006}(0.299)$	$0.990_{\pm 0.014}$
	0.1	$0.922_{\pm 0.008}(0.030)$	$0.899_{\pm 0.002}(0.000)$	$2.202_{\pm 0.012}(0.980)$	$2.167_{\pm 0.005}(0.956)$	$0.418_{\pm 0.009}(0.312)$	$0.419_{\pm 0.024}(0.323)$	$0.977_{\pm 0.001}$
UA22.1%, **RA**85.7%, **TA**76.2%	0.15	$0.869_{\pm 0.025}(0.031)$	$0.852_{\pm 0.002}(0.005)$	$1.467_{\pm 0.015}(0.490)$	$1.459_{\pm 0.004}(0.482)$	$0.591_{\pm 0.005}(0.267)$	$0.581_{\pm 0.001}(0.287)$	$0.958_{\pm 0.021}$
	0.2	$0.814_{\pm 0.020}(0.028)$	$0.801_{\pm 0.017}(0.005)$	$1.125_{\pm 0.005}(0.269)$	$1.138_{\pm 0.001}(0.275)$	$0.718_{\pm 0.017}(0.200)$	$0.704_{\pm 0.009}(0.218)$	$0.927_{\pm 0.017}$
SSD	0.05	$0.999_{\pm 0.001}(0.053)$	$0.952_{\pm 0.001}(0.004)$	$1.346_{\pm 0.001}(0.800)$	$1.824_{\pm 0.000}(0.282)$	$0.742_{\pm 0.000}(0.301)$	$0.522_{\pm 0.001}(0.072)$	$0.986_{\pm 0.001}$
	0.1	$0.995_{\pm 0.001}(0.103)$	$0.897_{\pm 0.000}(0.002)$	$1.033_{\pm 0.001}(0.189)$	$1.135_{\pm 0.001}(0.076)$	$0.959_{\pm 0.000}(0.229)$	$0.790_{\pm 0.000}(0.048)$	$0.847_{\pm 0.001}$
UA1.3%, **RA**98.4%, **TA**86.1%	0.15	$0.982_{\pm 0.001}(0.144)$	$0.847_{\pm 0.000}(0.000)$	$0.987_{\pm 0.000}(0.010)$	$0.956_{\pm 0.000}(0.021)$	$0.989_{\pm 0.001}(0.131)$	$0.890_{\pm 0.001}(0.022)$	$0.517_{\pm 0.001}$
	0.2	$0.959_{\pm 0.001}(0.173)$	$0.804_{\pm 0.001}(0.008)$	$0.961_{\pm 0.000}(0.105)$	$0.862_{\pm 0.000}(0.001)$	$0.995_{\pm 0.001}(0.077)$	$0.932_{\pm 0.001}(0.010)$	$0.243_{\pm 0.001}$
NegGrad+	0.05	$0.999_{\pm 0.000}(0.053)$	$0.979_{\pm 0.001}(0.031)$	$0.946_{\pm 0.002}(1.200)$	$1.443_{\pm 0.028}(0.663)$	$2.248_{\pm 0.063}(1.807)$	$2.358_{\pm 0.095}(1.908)$	$0.992_{\pm 0.001}$
	0.1	$0.996_{\pm 0.000}(0.104)$	$0.946_{\pm 0.002}(0.047)$	$0.900_{\pm 0.003}(0.322)$	$1.078_{\pm 0.006}(0.134)$	$1.295_{\pm 0.010}(0.565)$	$1.332_{\pm 0.008}(0.590)$	$0.933_{\pm 0.003}$
UA11.5%, **RA**98.7%, **TA**83.8%	0.15	$0.990_{\pm 0.000}(0.152)$	$0.900_{\pm 0.003}(0.052)$	$0.853_{\pm 0.004}(0.124)$	$1.008_{\pm 0.002}(0.031)$	$1.032_{\pm 0.010}(0.174)$	$1.033_{\pm 0.011}(0.165)$	$0.712_{\pm 0.015}$
	0.2	$0.977_{\pm 0.000}(0.191)$	$0.848_{\pm 0.003}(0.052)$	$0.805_{\pm 0.002}(0.052)$	$0.982_{\pm 0.000}(0.119)$	$0.909_{\pm 0.004}(0.009)$	$0.898_{\pm 0.007}(0.024)$	$0.381_{\pm 0.009}$
Salun	0.05	$0.993_{\pm 0.003}(0.047)$	$0.962_{\pm 0.026}(0.014)$	$3.284_{\pm 2.048}(1.138)$	$4.112_{\pm 0.813}(2.007)$	$1.546_{\pm 2.290}(1.105)$	$1.558_{\pm 2.336}(1.108)$	$0.989_{\pm 0.001}$
	0.1	$0.976_{\pm 0.011}(0.084)$	$0.924_{\pm 0.039}(0.026)$	$1.386_{\pm 0.423}(0.164)$	$1.579_{\pm 0.130}(0.368)$	$0.922_{\pm 0.566}(0.192)$	$0.896_{\pm 0.607}(0.154)$	$0.973_{\pm 0.002}$
UA9.2%, **RA**95.7%, **TA**81.9%	0.15	$0.944_{\pm 0.024}(0.106)$	$0.876_{\pm 0.046}(0.029)$	$1.051_{\pm 0.175}(0.074)$	$1.139_{\pm 0.017}(0.162)$	$0.919_{\pm 0.194}(0.061)$	$0.871_{\pm 0.226}(0.003)$	$0.942_{\pm 0.002}$
	0.2	$0.900_{\pm 0.044}(0.114)$	$0.825_{\pm 0.049}(0.029)$	$0.910_{\pm 0.097}(0.054)$	$0.969_{\pm 0.037}(0.105)$	$0.928_{\pm 0.040}(0.011)$	$0.876_{\pm 0.063}(0.045)$	$0.893_{\pm 0.002}$
SFRon	0.05	$0.994_{\pm 0.001}(0.048)$	$0.947_{\pm 0.003}(0.001)$	$2.010_{\pm 0.188}(0.136)$	$2.327_{\pm 0.087}(0.222)$	$0.497_{\pm 0.045}(0.057)$	$0.407_{\pm 0.016}(0.043)$	$0.983_{\pm 0.002}$
	0.1	$0.980_{\pm 0.006}(0.087)$	$0.900_{\pm 0.003}(0.001)$	$1.245_{\pm 0.060}(0.023)$	$1.338_{\pm 0.039}(0.126)$	$0.788_{\pm 0.041}(0.058)$	$0.673_{\pm 0.020}(0.069)$	$0.909_{\pm 0.003}$
UA6.3%, **RA**96.8%, **TA**82.9%	0.15	$0.951_{\pm 0.011}(0.113)$	$0.849_{\pm 0.003}(0.001)$	$1.041_{\pm 0.020}(0.065)$	$1.044_{\pm 0.023}(0.067)$	$0.913_{\pm 0.028}(0.055)$	$0.813_{\pm 0.016}(0.055)$	$0.738_{\pm 0.029}$
	0.2	$0.910_{\pm 0.011}(0.125)$	$0.803_{\pm 0.003}(0.008)$	$0.947_{\pm 0.006}(0.091)$	$0.910_{\pm 0.022}(0.046)$	$0.961_{\pm 0.017}(0.044)$	$0.884_{\pm 0.017}(0.038)$	$0.523_{\pm 0.068}$

Table 14: Unlearning performance of 9 unlearning methods on **Tiny ImageNet** with **ViT** in **class-wise forgetting** scenario.

Methods	α	Coverage $\mathcal{D}_f \downarrow$	Coverage $\mathcal{D}_{tf} \downarrow$	Coverage $\mathcal{D}_{tr} \uparrow$	Set Size $\mathcal{D}_f \uparrow$	Set Size $\mathcal{D}_{tf} \uparrow$	Set Size $\mathcal{D}_{tr} \downarrow$	CR $\mathcal{D}_f \downarrow$	CR $\mathcal{D}_{tf} \downarrow$	CR $\mathcal{D}_{tr} \uparrow$	$\hat{q}_f$	$\hat{q}_{test}$
RT	0.05	$1.000_{\pm 0.000}(0.000)$	$1.000_{\pm 0.000}(0.000)$	$0.950_{\pm 0.003}(0.000)$	$200.000_{\pm 0.000}(0.000)$	$200.000_{\pm 0.000}(0.000)$	$1.785_{\pm 0.056}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.532_{\pm 0.009}(0.000)$	$1.000_{\pm 0.000}$	$0.984_{\pm 0.002}$
	0.1	$0.936_{\pm 0.011}(0.000)$	$0.960_{\pm 0.016}(0.000)$	$0.903_{\pm 0.009}(0.000)$	$192.882_{\pm 0.912}(0.000)$	$193.340_{\pm 2.620}(0.000)$	$1.146_{\pm 0.002}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.788_{\pm 0.008}(0.000)$	$1.000_{\pm 0.000}$	$0.859_{\pm 0.004}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.904_{\pm 0.039}(0.000)$	$0.960_{\pm 0.046}(0.000)$	$0.853_{\pm 0.005}(0.000)$	$186.791_{\pm 2.173}(0.000)$	$188.880_{\pm 1.802}(0.000)$	$0.957_{\pm 0.010}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.892_{\pm 0.003}(0.000)$	$1.000_{\pm 0.000}$	$0.535_{\pm 0.002}$
RA98.7%, **TA**86.4%	0.2	$0.787_{\pm 0.061}(0.000)$	$0.860_{\pm 0.024}(0.000)$	$0.805_{\pm 0.003}(0.000)$	$171.051_{\pm 3.183}(0.000)$	$174.480_{\pm 2.311}(0.000)$	$0.860_{\pm 0.010}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.936_{\pm 0.002}(0.000)$	$1.000_{\pm 0.000}$	$0.232_{\pm 0.001}$
FT	0.05	$0.993_{\pm 0.006}(0.007)$	$0.960_{\pm 0.009}(0.040)$	$0.952_{\pm 0.006}(0.002)$	$8.360_{\pm 0.007}(191.640)$	$8.280_{\pm 0.006}(191.720)$	$2.442_{\pm 0.011}(0.657)$	$0.119_{\pm 0.018}(0.114)$	$0.116_{\pm 0.001}(0.111)$	$0.390_{\pm 0.023}(0.142)$	$0.999_{\pm 0.006}$	$0.993_{\pm 0.005}$
	0.1	$0.984_{\pm 0.009}(0.048)$	$0.860_{\pm 0.013}(0.100)$	$0.898_{\pm 0.005}(0.005)$	$1.802_{\pm 0.009}(191.080)$	$1.660_{\pm 0.018}(191.680)$	$1.287_{\pm 0.009}(0.141)$	$0.546_{\pm 0.008}(0.541)$	$0.518_{\pm 0.004}(0.513)$	$0.698_{\pm 0.019}(0.090)$	$0.971_{\pm 0.019}$	$0.924_{\pm 0.016}$
UA13.8%, $\mathbf{UA}_{tf}$22.0%,	0.15	$0.902_{\pm 0.019}(0.002)$	$0.800_{\pm 0.004}(0.160)$	$0.852_{\pm 0.017}(0.001)$	$1.120_{\pm 0.021}(185.671)$	$1.040_{\pm 0.006}(187.840)$	$1.021_{\pm 0.017}(0.064)$	$0.806_{\pm 0.012}(0.801)$	$0.769_{\pm 0.013}(0.764)$	$0.835_{\pm 0.022}(0.057)$	$0.809_{\pm 0.010}$	$0.686_{\pm 0.004}$
RA97.5%, **TA**84.1%	0.2	$0.860_{\pm 0.021}(0.073)$	$0.760_{\pm 0.003}(0.100)$	$0.800_{\pm 0.018}(0.005)$	$0.969_{\pm 0.002}(170.082)$	$0.960_{\pm 0.003}(173.520)$	$0.882_{\pm 0.010}(0.022)$	$0.888_{\pm 0.005}(0.883)$	$0.792_{\pm 0.002}(0.787)$	$0.907_{\pm 0.006}(0.029)$	$0.595_{\pm 0.002}$	$0.338_{\pm 0.019}$
RL	0.05	$0.998_{\pm 0.005}(0.002)$	$0.980_{\pm 0.003}(0.020)$	$0.952_{\pm 0.049}(0.002)$	$199.489_{\pm 0.512}(0.511)$	$195.220_{\pm 1.003}(4.780)$	$2.317_{\pm 0.009}(0.532)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.411_{\pm 0.000}(0.121)$	$1.000_{\pm 0.000}$	$0.995_{\pm 0.032}$
	0.1	$0.971_{\pm 0.013}(0.035)$	$0.900_{\pm 0.017}(0.060)$	$0.900_{\pm 0.002}(0.003)$	$180.442_{\pm 0.710}(12.440)$	$170.960_{\pm 0.948}(22.380)$	$1.237_{\pm 0.050}(0.991)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.727_{\pm 0.016}(0.061)$	$1.000_{\pm 0.000}$	$0.925_{\pm 0.024}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.922_{\pm 0.011}(0.018)$	$0.900_{\pm 0.011}(0.060)$	$0.852_{\pm 0.015}(0.001)$	$165.884_{\pm 2.037}(20.907)$	$159.980_{\pm 1.012}(28.900)$	$1.001_{\pm 0.003}(0.044)$	$0.006_{\pm 0.001}(0.001)$	$0.006_{\pm 0.000}(0.001)$	$0.851_{\pm 0.023}(0.041)$	$1.000_{\pm 0.000}$	$0.641_{\pm 0.035}$
RA98.2%, **TA**84.6%	0.2	$0.882_{\pm 0.007}(0.095)$	$0.860_{\pm 0.007}(0.000)$	$0.807_{\pm 0.007}(0.002)$	$154.896_{\pm 2.028}(16.155)$	$149.280_{\pm 3.013}(25.200)$	$0.886_{\pm 0.032}(0.026)$	$0.006_{\pm 0.000}(0.001)$	$0.006_{\pm 0.001}(0.001)$	$0.912_{\pm 0.013}(0.024)$	$1.000_{\pm 0.000}$	$0.262_{\pm 0.022}$
GA	0.05	$1.000_{\pm 0.001}(0.000)$	$0.980_{\pm 0.002}(0.020)$	$0.948_{\pm 0.026}(0.002)$	$22.836_{\pm 0.045}(177.164)$	$20.600_{\pm 0.011}(179.400)$	$1.781_{\pm 0.017}(0.004)$	$0.044_{\pm 0.017}(0.019)$	$0.048_{\pm 0.028}(0.043)$	$0.532_{\pm 0.013}(0.000)$	$1.000_{\pm 0.000}$	$0.984_{\pm 0.033}$
	0.1	$0.991_{\pm 0.022}(0.055)$	$0.900_{\pm 0.014}(0.060)$	$0.897_{\pm 0.016}(0.006)$	$1.631_{\pm 0.031}(191.251)$	$1.720_{\pm 0.005}(191.620)$	$1.133_{\pm 0.044}(0.013)$	$0.608_{\pm 0.006}(0.603)$	$0.523_{\pm 0.007}(0.518)$	$0.792_{\pm 0.037}(0.004)$	$0.972_{\pm 0.033}$	$0.849_{\pm 0.039}$
UA9.1%, $\mathbf{UA}_{tf}$20.0%,	0.15	$0.958_{\pm 0.003}(0.054)$	$0.820_{\pm 0.010}(0.140)$	$0.850_{\pm 0.006}(0.003)$	$1.151_{\pm 0.039}(185.640)$	$1.140_{\pm 0.042}(187.740)$	$0.958_{\pm 0.026}(0.001)$	$0.832_{\pm 0.003}(0.827)$	$0.719_{\pm 0.021}(0.714)$	$0.887_{\pm 0.044}(0.005)$	$0.868_{\pm 0.023}$	$0.535_{\pm 0.011}$
RA98.6%, **TA**86.1%	0.2	$0.880_{\pm 0.047}(0.093)$	$0.800_{\pm 0.051}(0.060)$	$0.803_{\pm 0.025}(0.002)$	$0.929_{\pm 0.002}(170.122)$	$0.900_{\pm 0.009}(173.580)$	$0.861_{\pm 0.006}(0.001)$	$0.947_{\pm 0.036}(0.942)$	$0.889_{\pm 0.029}(0.884)$	$0.933_{\pm 0.027}(0.003)$	$0.473_{\pm 0.016}$	$0.238_{\pm 0.000}$
Teacher	0.05	$0.982_{\pm 0.014}(0.018)$	$1.000_{\pm 0.007}(0.000)$	$0.952_{\pm 0.025}(0.002)$	$199.971_{\pm 0.009}(0.029)$	$200.000_{\pm 0.000}(0.000)$	$5.095_{\pm 0.020}(3.310)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.187_{\pm 0.008}(0.345)$	$1.000_{\pm 0.000}$	$0.989_{\pm 0.001}$
	0.1	$0.909_{\pm 0.013}(0.027)$	$0.940_{\pm 0.015}(0.020)$	$0.903_{\pm 0.032}(0.000)$	$199.813_{\pm 0.009}(6.931)$	$199.900_{\pm 0.013}(6.560)$	$2.033_{\pm 0.031}(0.887)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.444_{\pm 0.006}(0.344)$	$1.000_{\pm 0.000}$	$0.965_{\pm 0.003}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.887_{\pm 0.014}(0.017)$	$0.880_{\pm 0.011}(0.080)$	$0.854_{\pm 0.003}(0.001)$	$199.667_{\pm 0.030}(12.876)$	$199.760_{\pm 0.026}(10.880)$	$1.331_{\pm 0.012}(0.374)$	$0.004_{\pm 0.000}(0.001)$	$0.004_{\pm 0.001}(0.001)$	$0.641_{\pm 0.010}(0.251)$	$1.000_{\pm 0.000}$	$0.919_{\pm 0.001}$
RA88.8%, **TA**78.6%	0.2	$0.838_{\pm 0.022}(0.051)$	$0.840_{\pm 0.002}(0.020)$	$0.799_{\pm 0.017}(0.006)$	$199.413_{\pm 0.024}(28.362)$	$199.620_{\pm 0.030}(25.140)$	$1.022_{\pm 0.017}(0.162)$	$0.004_{\pm 0.001}(0.001)$	$0.004_{\pm 0.001}(0.001)$	$0.781_{\pm 0.019}(0.155)$	$1.000_{\pm 0.000}$	$0.825_{\pm 0.002}$
SSD	0.05	$1.000_{\pm 0.000}(0.000)$	$1.000_{\pm 0.000}(0.000)$	$0.950_{\pm 0.017}(0.000)$	$198.769_{\pm 0.052}(1.231)$	$197.320_{\pm 1.010}(2.680)$	$1.866_{\pm 0.019}(0.081)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.509_{\pm 0.013}(0.023)$	$1.000_{\pm 0.000}$	$0.986_{\pm 0.006}$
	0.1	$0.949_{\pm 0.017}(0.013)$	$0.900_{\pm 0.012}(0.060)$	$0.897_{\pm 0.007}(0.006)$	$171.073_{\pm 0.209}(21.809)$	$169.360_{\pm 2.002}(23.980)$	$1.141_{\pm 0.014}(0.005)$	$0.006_{\pm 0.000}(0.001)$	$0.005_{\pm 0.000}(0.000)$	$0.786_{\pm 0.021}(0.002)$	$1.000_{\pm 0.000}$	$0.854_{\pm 0.006}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.913_{\pm 0.007}(0.009)$	$0.880_{\pm 0.020}(0.080)$	$0.852_{\pm 0.015}(0.001)$	$157.140_{\pm 1.209}(29.651)$	$154.960_{\pm 0.907}(33.920)$	$0.959_{\pm 0.011}(0.002)$	$0.006_{\pm 0.001}(0.001)$	$0.006_{\pm 0.000}(0.001)$	$0.888_{\pm 0.012}(0.004)$	$1.000_{\pm 0.000}$	$0.538_{\pm 0.007}$
RA98.4%, **TA**86.1%	0.2	$0.833_{\pm 0.007}(0.046)$	$0.800_{\pm 0.013}(0.060)$	$0.806_{\pm 0.022}(0.001)$	$136.502_{\pm 3.022}(34.549)$	$136.420_{\pm 2.422}(38.060)$	$0.864_{\pm 0.002}(0.004)$	$0.006_{\pm 0.000}(0.001)$	$0.006_{\pm 0.000}(0.001)$	$0.932_{\pm 0.015}(0.004)$	$1.000_{\pm 0.000}$	$0.254_{\pm 0.005}$
NegGrad+	0.05	$1.000_{\pm 0.000}(0.000)$	$1.000_{\pm 0.000}(0.000)$	$0.947_{\pm 0.002}(0.003)$	$200.000_{\pm 0.000}(0.000)$	$200.000_{\pm 0.000}(0.000)$	$1.850_{\pm 0.036}(0.065)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.512_{\pm 0.009}(0.020)$	$1.000_{\pm 0.000}$	$0.987_{\pm 0.001}$
	0.1	$0.927_{\pm 0.104}(0.009)$	$0.950_{\pm 0.071}(0.010)$	$0.894_{\pm 0.001}(0.009)$	$193.994_{\pm 8.493}(1.112)$	$197.490_{\pm 3.550}(4.150)$	$1.140_{\pm 0.007}(0.006)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.784_{\pm 0.004}(0.004)$	$1.000_{\pm 0.000}$	$0.859_{\pm 0.003}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.862_{\pm 0.013}(0.042)$	$0.870_{\pm 0.042}(0.090)$	$0.849_{\pm 0.000}(0.004)$	$188.686_{\pm 0.954}(1.894)$	$195.590_{\pm 0.863}(6.710)$	$0.961_{\pm 0.001}(0.004)$	$0.005_{\pm 0.000}(0.000)$	$0.004_{\pm 0.000}(0.001)$	$0.884_{\pm 0.000}(0.008)$	$1.000_{\pm 0.000}$	$0.537_{\pm 0.003}$
RA99.0%, **TA**85.8%	0.2	$0.830_{\pm 0.027}(0.043)$	$0.840_{\pm 0.085}(0.020)$	$0.802_{\pm 0.002}(0.003)$	$187.219_{\pm 0.064}(16.168)$	$194.310_{\pm 0.948}(19.830)$	$0.861_{\pm 0.001}(0.002)$	$0.004_{\pm 0.000}(0.000)$	$0.004_{\pm 0.000}(0.001)$	$0.931_{\pm 0.001}(0.005)$	$1.000_{\pm 0.000}$	$0.220_{\pm 0.002}$
Salun	0.05	$0.997_{\pm 0.003}(0.003)$	$0.993_{\pm 0.012}(0.007)$	$0.949_{\pm 0.001}(0.001)$	$199.599_{\pm 0.207}(0.401)$	$197.440_{\pm 1.244}(2.560)$	$1.980_{\pm 0.050}(0.196)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.479_{\pm 0.012}(0.053)$	$1.000_{\pm 0.000}$	$0.989_{\pm 0.001}$
	0.1	$0.975_{\pm 0.019}(0.039)$	$0.927_{\pm 0.023}(0.033)$	$0.899_{\pm 0.001}(0.003)$	$191.973_{\pm 1.616}(0.910)$	$185.220_{\pm 0.918}(8.120)$	$1.169_{\pm 0.002}(0.023)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.769_{\pm 0.001}(0.019)$	$1.000_{\pm 0.000}$	$0.884_{\pm 0.001}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$0.961_{\pm 0.022}(0.057)$	$0.860_{\pm 0.040}(0.100)$	$0.850_{\pm 0.001}(0.004)$	$187.825_{\pm 3.461}(1.034)$	$180.307_{\pm 2.908}(8.573)$	$0.969_{\pm 0.002}(0.012)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.877_{\pm 0.002}(0.015)$	$1.000_{\pm 0.000}$	$0.562_{\pm 0.003}$
RA98.4%, **TA**86.1%	0.2	$0.960_{\pm 0.015}(0.173)$	$0.840_{\pm 0.020}(0.020)$	$0.801_{\pm 0.001}(0.004)$	$184.838_{\pm 3.478}(13.787)$	$177.647_{\pm 2.627}(3.167)$	$0.863_{\pm 0.004}(0.003)$	$0.005_{\pm 0.000}(0.001)$	$0.005_{\pm 0.000}(0.000)$	$0.928_{\pm 0.003}(0.008)$	$1.000_{\pm 0.000}$	$0.230_{\pm 0.009}$
SFRon	0.05	$1.000_{\pm 0.000}(0.000)$	$1.000_{\pm 0.000}(0.000)$	$0.948_{\pm 0.001}(0.002)$	$200.000_{\pm 0.000}(0.000)$	$200.000_{\pm 0.000}(0.000)$	$2.264_{\pm 0.254}(0.479)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.423_{\pm 0.050}(0.110)$	$1.000_{\pm 0.000}$	$0.990_{\pm 0.003}$
	0.1	$1.000_{\pm 0.000}(0.064)$	$1.000_{\pm 0.000}(0.040)$	$0.900_{\pm 0.001}(0.003)$	$200.000_{\pm 0.000}(7.118)$	$200.000_{\pm 0.000}(6.660)$	$1.266_{\pm 0.044}(0.120)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.711_{\pm 0.026}(0.077)$	$1.000_{\pm 0.000}$	$0.912_{\pm 0.017}$
UA100%, $\mathbf{UA}_{tf}$100%,	0.15	$1.000_{\pm 0.000}(0.096)$	$1.000_{\pm 0.000}(0.040)$	$0.850_{\pm 0.002}(0.003)$	$200.000_{\pm 0.000}(13.209)$	$200.000_{\pm 0.000}(11.120)$	$1.009_{\pm 0.012}(0.051)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.843_{\pm 0.011}(0.049)$	$1.000_{\pm 0.000}$	$0.668_{\pm 0.029}$
RA96.1%, **TA**84.3%	0.2	$1.000_{\pm 0.000}(0.213)$	$1.000_{\pm 0.000}(0.140)$	$0.802_{\pm 0.003}(0.003)$	$200.000_{\pm 0.000}(28.949)$	$200.000_{\pm 0.000}(25.520)$	$0.886_{\pm 0.006}(0.026)$	$0.005_{\pm 0.000}(0.000)$	$0.005_{\pm 0.000}(0.000)$	$0.905_{\pm 0.007}(0.031)$	$1.000_{\pm 0.000}$	$0.358_{\pm 0.017}$

Table 15: **MIACR** performance on **CIFAR-10** with **ResNet-18**.

Methods	α	10% Forgetting MIACR ↑	10% Forgetting $\hat{q}$	50% Forgetting MIACR ↑	50% Forgetting $\hat{q}$
RT **MIA**86.92% (**10% Forgetting**) **MIA**82.79% (**50% Forgetting**)	0.05	$0.091_{\pm 0.001}(0.000)$	$0.877_{\pm 0.004}$	$0.117_{\pm 0.010}(0.000)$	$0.899_{\pm 0.007}$
	0.1	$0.147_{\pm 0.000}(0.000)$	$0.589_{\pm 0.008}$	$0.201_{\pm 0.011}(0.000)$	$0.570_{\pm 0.001}$
	0.15	$0.203_{\pm 0.010}(0.000)$	$0.485_{\pm 0.005}$	$0.272_{\pm 0.011}(0.000)$	$0.472_{\pm 0.009}$
	0.2	$0.246_{\pm 0.000}(0.000)$	$0.473_{\pm 0.001}$	$0.318_{\pm 0.006}(0.000)$	$0.459_{\pm 0.003}$
FT **MIA**92.00% (**10% Forgetting**) **MIA**92.92% (**50% Forgetting**)	0.05	$0.039_{\pm 0.011}(0.052)$	$0.745_{\pm 0.013}$	$0.036_{\pm 0.001}(0.081)$	$0.780_{\pm 0.011}$
	0.1	$0.077_{\pm 0.008}(0.070)$	$0.627_{\pm 0.000}$	$0.103_{\pm 0.011}(0.098)$	$0.558_{\pm 0.012}$
	0.15	$0.128_{\pm 0.007}(0.075)$	$0.517_{\pm 0.008}$	$0.159_{\pm 0.011}(0.113)$	$0.494_{\pm 0.011}$
	0.2	$0.196_{\pm 0.003}(0.050)$	$0.483_{\pm 0.003}$	$0.244_{\pm 0.010}(0.074)$	$0.476_{\pm 0.004}$
RL **MIA**74.21% (**10% Forgetting**) **MIA**61.15% (**50% Forgetting**)	0.05	$0.083_{\pm 0.010}(0.008)$	$0.627_{\pm 0.011}$	$0.050_{\pm 0.016}(0.067)$	$0.547_{\pm 0.000}$
	0.1	$0.178_{\pm 0.027}(0.031)$	$0.572_{\pm 0.005}$	$0.137_{\pm 0.030}(0.064)$	$0.547_{\pm 0.001}$
	0.15	$0.272_{\pm 0.006}(0.069)$	$0.492_{\pm 0.015}$	$0.194_{\pm 0.031}(0.078)$	$0.547_{\pm 0.001}$
	0.2	$0.320_{\pm 0.025}(0.074)$	$0.485_{\pm 0.011}$	$0.261_{\pm 0.001}(0.057)$	$0.546_{\pm 0.000}$
GA **MIA**98.80% (**10% Forgetting**) **MIA**98.86% (**50% Forgetting**)	0.05	$0.012_{\pm 0.002}(0.079)$	$0.862_{\pm 0.016}$	$0.012_{\pm 0.019}(0.105)$	$0.771_{\pm 0.008}$
	0.1	$0.032_{\pm 0.003}(0.115)$	$0.502_{\pm 0.016}$	$0.055_{\pm 0.003}(0.146)$	$0.486_{\pm 0.005}$
	0.15	$0.076_{\pm 0.000}(0.127)$	$0.477_{\pm 0.007}$	$0.107_{\pm 0.016}(0.165)$	$0.474_{\pm 0.015}$
	0.2	$0.146_{\pm 0.016}(0.100)$	$0.476_{\pm 0.019}$	$0.164_{\pm 0.016}(0.154)$	$0.473_{\pm 0.011}$
Teacher **MIA**87.24% (**10% Forgetting**) **MIA**93.24% (**50% Forgetting**)	0.05	$0.013_{\pm 0.006}(0.078)$	$0.750_{\pm 0.014}$	$0.031_{\pm 0.003}(0.086)$	$0.635_{\pm 0.018}$
	0.1	$0.038_{\pm 0.023}(0.109)$	$0.672_{\pm 0.028}$	$0.065_{\pm 0.021}(0.136)$	$0.582_{\pm 0.013}$
	0.15	$0.072_{\pm 0.013}(0.131)$	$0.625_{\pm 0.029}$	$0.110_{\pm 0.017}(0.162)$	$0.548_{\pm 0.007}$
	0.2	$0.113_{\pm 0.008}(0.133)$	$0.588_{\pm 0.019}$	$0.159_{\pm 0.017}(0.159)$	$0.532_{\pm 0.006}$
FF **MIA**71.52% (**10% Forgetting**) **MIA**76.02% (**50% Forgetting**)	0.05	$0.038_{\pm 0.009}(0.053)$	$0.500_{\pm 0.003}$	$0.043_{\pm 0.003}(0.074)$	$0.508_{\pm 0.003}$
	0.1	$0.051_{\pm 0.017}(0.096)$	$0.486_{\pm 0.018}$	$0.089_{\pm 0.001}(0.112)$	$0.509_{\pm 0.013}$
	0.15	$0.080_{\pm 0.015}(0.123)$	$0.474_{\pm 0.013}$	$0.130_{\pm 0.017}(0.142)$	$0.506_{\pm 0.007}$
	0.2	$0.109_{\pm 0.004}(0.137)$	$0.473_{\pm 0.002}$	$0.168_{\pm 0.010}(0.150)$	$0.499_{\pm 0.006}$
SSD **MIA**98.78% (**10% Forgetting**) **MIA**98.87% (**50% Forgetting**)	0.05	$0.011_{\pm 0.011}(0.080)$	$0.861_{\pm 0.012}$	$0.012_{\pm 0.002}(0.105)$	$0.748_{\pm 0.011}$
	0.1	$0.031_{\pm 0.010}(0.116)$	$0.511_{\pm 0.011}$	$0.051_{\pm 0.005}(0.150)$	$0.488_{\pm 0.001}$
	0.15	$0.077_{\pm 0.005}(0.126)$	$0.480_{\pm 0.013}$	$0.104_{\pm 0.006}(0.168)$	$0.477_{\pm 0.015}$
	0.2	$0.139_{\pm 0.011}(0.107)$	$0.475_{\pm 0.013}$	$0.168_{\pm 0.012}(0.150)$	$0.477_{\pm 0.006}$
NegGrad+ **MIA**90.30% (**10% Forgetting**) **MIA**93.82% (**50% Forgetting**)	0.05	$0.076_{\pm 0.025}(0.015)$	$0.844_{\pm 0.024}$	$0.045_{\pm 0.008}(0.072)$	$0.863_{\pm 0.025}$
	0.1	$0.128_{\pm 0.018}(0.019)$	$0.481_{\pm 0.009}$	$0.109_{\pm 0.007}(0.092)$	$0.511_{\pm 0.008}$
	0.15	$0.174_{\pm 0.022}(0.029)$	$0.480_{\pm 0.005}$	$0.167_{\pm 0.017}(0.105)$	$0.477_{\pm 0.010}$
	0.2	$0.213_{\pm 0.012}(0.033)$	$0.480_{\pm 0.004}$	$0.230_{\pm 0.014}(0.088)$	$0.472_{\pm 0.008}$
Salun **MIA**57.58% (**10% Forgetting**) **MIA**59.12% (**50% Forgetting**)	0.05	$0.055_{\pm 0.014}(0.036)$	$0.691_{\pm 0.011}$	$0.044_{\pm 0.001}(0.073)$	$0.670_{\pm 0.008}$
	0.1	$0.113_{\pm 0.009}(0.034)$	$0.681_{\pm 0.013}$	$0.115_{\pm 0.009}(0.086)$	$0.630_{\pm 0.009}$
	0.15	$0.198_{\pm 0.006}(0.005)$	$0.642_{\pm 0.015}$	$0.170_{\pm 0.009}(0.102)$	$0.610_{\pm 0.003}$
	0.2	$0.267_{\pm 0.009}(0.021)$	$0.608_{\pm 0.011}$	$0.220_{\pm 0.005}(0.098)$	$0.586_{\pm 0.005}$
SFRon **MIA**91.55% (**10% Forgetting**) **MIA**92.52% (**50% Forgetting**)	0.05	$0.017_{\pm 0.001}(0.074)$	$0.711_{\pm 0.009}$	$0.017_{\pm 0.002}(0.100)$	$0.715_{\pm 0.008}$
	0.1	$0.040_{\pm 0.004}(0.107)$	$0.626_{\pm 0.025}$	$0.046_{\pm 0.002}(0.155)$	$0.562_{\pm 0.013}$
	0.15	$0.113_{\pm 0.003}(0.090)$	$0.517_{\pm 0.003}$	$0.134_{\pm 0.013}(0.138)$	$0.498_{\pm 0.003}$
	0.2	$0.184_{\pm 0.002}(0.062)$	$0.487_{\pm 0.002}$	$0.206_{\pm 0.014}(0.112)$	$0.483_{\pm 0.002}$