

CSI/Threat Score

	RFs	Ada	SVMs	XGBoost
C23	0.22 (0.016)	0.36 (0.0197)	0.15 (0.017)	0.19 (0.016)
N20	0.18 (0.013)	0.14 (0.007)	0.24 (0.012)	0.25 (0.009)
P20	0.13 (0.016)	0.08 (0.009)	0.08 (0.013)	0.02 (0.003)
L20	0.17 (0.015)	0.29 (0.017)	0.07 (0.11)	0.01 (0.004)
O21	0.16 (0.009)	0.31 (0.017)	0.09 (0.11)	0.09 (0.011)

ETS

	RFs	Ada	SVMs	XGBoost
C23	0.06 (0.005)	0.04 (0.003)	0.02 (0.004)	0.06 (0.005)
N20	0.09 (0.005)	0.08 (0.004)	0.09 (0.004)	0.09 (0.004)
P20	0.01 (0.002)	0.01 (0.001)	0.00 (0.001)	0.00 (0.001)
L20	0.01 (0.001)	0.01 (0.001)	0.01 (0.001)	0.00 (0.001)
O21	0.06 (0.009)	0.11 (0.008)	0.04 (0.006)	0.01 (0.003)

FAR

	RFs	Ada	SVMs	XGBoost
C23	0.91 (0.008)	0.94 (0.004)	0.95 (0.006)	0.90 (0.007)
N20	0.77 (0.009)	0.75 (0.009)	0.81 (0.007)	0.83 (0.007)
P20	0.99 (0.002)	0.99 (0.002)	0.99 (0.001)	1.00 (0.001)
L20	0.99 (0.001)	0.99 (0.001)	0.99 (0.001)	1.00 (0.001)
O21	0.86 (0.014)	0.81 (0.015)	0.86 (0.019)	0.95 (0.006)

POD

	RFs	Ada	SVMs	XGBoost
C23	0.21 (0.016)	0.36 (0.020)	0.15 (0.017)	0.19 (0.016)
N20	0.18 (0.013)	0.14 (0.007)	0.24 (0.012)	0.25 (0.009)
P20	0.13 (0.016)	0.08 (0.009)	0.08 (0.013)	0.02 (0.003)
L20	0.17 (0.015)	0.29 (0.016)	0.08 (0.012)	0.03 (0.004)
O21	0.16 (0.009)	0.31 (0.17)	0.09 (0.011)	0.09 (0.011)

True Skill Statistic

	RFs	Ada	SVMs	XGBoost
C23	0.20 (0.016)	0.33 (0.019)	0.13 (0.016)	0.18 (0.016)
N20	0.17 (0.013)	0.13 (0.007)	0.22 (0.012)	0.22 (0.009)
P20	0.11 (0.016)	0.06 (0.008)	0.05 (0.013)	0.01 (0.002)
L20	0.15 (0.014)	0.27 (0.016)	0.07 (0.011)	0.02 (0.004)
O21	0.14 (0.009)	0.28 (0.016)	0.08 (0.011)	0.06 (0.010)

AUC

	RFs	Ada	SVMs	XGBoost
C23	0.60	0.66	0.56	0.59
N20	0.58	0.57	0.61	0.61
P20	0.55	0.53	0.53	0.50
L20	0.58	0.63	0.54	0.51
O21	0.57	0.64	0.54	0.53

CSI/Threat Score

	ANNs	GRUs	LSTMs	CNNs
C23	0.04 (0.006)	0.10	0.26 (0.035)	0.13 (0.015)
N20	0.01 (0.003)	0.02	0.26 (0.055)	0.20 (0.028)
P20	0.00 (0.000)	0.03	0.09 (0.025)	0.07 (0.024)
L20	0.06 (0.026)	0.01	0.17 (0.028)	0.07 (0.024)
O21	0.21 (0.060)	0.01	0.11 (0.016)	0.17 (0.012)

ETS

	ANNs	GRUs	LSTMs	CNNs
C23	0.02 (0.004)	0.09	0.07 (0.010)	0.05 (0.006)
N20	0.00 (0.002)	0.02	0.06 (0.010)	0.07 (0.008)
P20	0.00 (0.000)	0.02	0.02 (0.006)	0.00 (0.002)
L20	0.00 (0.004)	0.01	0.01 (0.001)	0.00 (0.001)
O21	0.03 (0.007)	0.01	0.05 (0.009)	0.06 (0.005)

FAR

	ANNs	GRUs	LSTMs	CNNs
C23	0.88 (0.014)	0.82	0.88 (0.016)	0.89 (0.013)
N20	0.97 (0.005)	0.76	0.85 (0.009)	0.83 (0.009)
P20	1.00 (0.000)	0.93	0.93 (0.015)	0.99 (0.003)
L20	0.99 (0.006)	0.99	0.99 (0.001)	0.99 (0.002)
O21	0.89 (0.024)	0.77	0.82 (0.026)	0.87 (0.014)

POD

	ANNs	GRUs	LSTMs	CNNs
C23	0.04 (0.006)	0.17	0.26 (0.035)	0.13 (0.015)
N20	0.01 (0.003)	0.02	0.26 (0.055)	0.20 (0.028)
P20	0.00 (0.000)	0.04	0.09 (0.025)	0.07 (0.024)
L20	0.06 (0.026)	0.13	0.17 (0.028)	0.07 (0.024)
O21	0.21 (0.060)	0.01	0.11 (0.016)	0.17 (0.012)

True Skill Statistic

	ANNs	GRUs	LSTMs	CNNs
C23	0.03 (0.006)	0.16	0.25 (0.034)	0.12 (0.015)
N20	0.00 (0.002)	0.02	0.23 (0.046)	0.18 (0.025)
P20	0.00 (0.000)	0.04	0.08 (0.025)	0.00 (0.002)
L20	0.06 (0.023)	0.12	0.16 (0.027)	0.06 (0.023)
O21	0.18 (0.050)	0.01	0.10 (0.016)	0.15 (0.011)

AUC

	ANNs	GRUs	LSTMs	CNNs
C23	0.52	0.58	0.62	0.56
N20	0.50	0.51	0.62	0.59
P20	0.50	0.52	0.54	0.53
L20	0.52	0.56	0.58	0.53
O21	0.57	0.51	0.55	0.57

Train time (seconds/epoch)

	ANNs	GRUs	LSTMs	CNNs
C23	103	-	21 - 37	80 - 150
N20	124	-	65	80 - 150
P20	123	-	65	85 - 150
L20	30 - 55	-	65	80 - 155
O21	31	-	65	80 - 165