

MODEL RESEARCH TASK

Model / Algorithm Class	Dataset(s) Used	Accuracy / F1	AUC-ROC	Robustness
CNN / Multi-scale CNN	CIC-IDS, UNSW, Edge IIoTset	High accuracy; F1 often > 0.90	High-90s	Good for spatial features; often paired with RNNs for temporal context
RNN / LSTM / BiGRU	CIC-IDS, Edge IIoTset	F1 > 0.90 in flow/session modeling	High AUC on benchmark splits	Captures time dependencies; dual attention improves focus
Transformer / Attention Models	CIC-IDS, Edge IIoTset	High precision/recall	High AUC	Excellent for long-range dependencies and telemetry fusion
Graph / Hypergraph Encoders	CIC-IDS, UNSW, multi-dataset setups	Strong generalization across datasets	Not always reported	Encodes multi-view relations; boosts robustness in flow interaction modeling
GANs (WGAN-GP, CGAN, hybrids)	CIC-IDS + synthetic traffic	Used for augmentation, not direct accuracy	Evaluated via robustness	Improves adversarial robustness; instability in training noted
Contrastive / Self-supervised Learning	Phishing/web datasets, CIC-IDS	Improves downstream F1/accuracy	Proxy AUC tasks used	Reduces label dependency; boosts transferability across domains
Autoencoders / One-class / Isolation Forest	CIC-IDS, UNSW	High anomaly detection rate	AUC > 0.95 in some setups	Learns normal behavior; effective in unsupervised settings