The Adversarial Defense Grid

Graph AI vs. The Fraud Networks

● AI/ML Technical Documentation ● Production Systems ● Fintech Innovation ●

Technical Documentation Series

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Executive Summary

Fraud detection has evolved from rule-based systems to sophisticated Graph Neural Networks that analyze relationships and patterns across millions of transactions and entities.

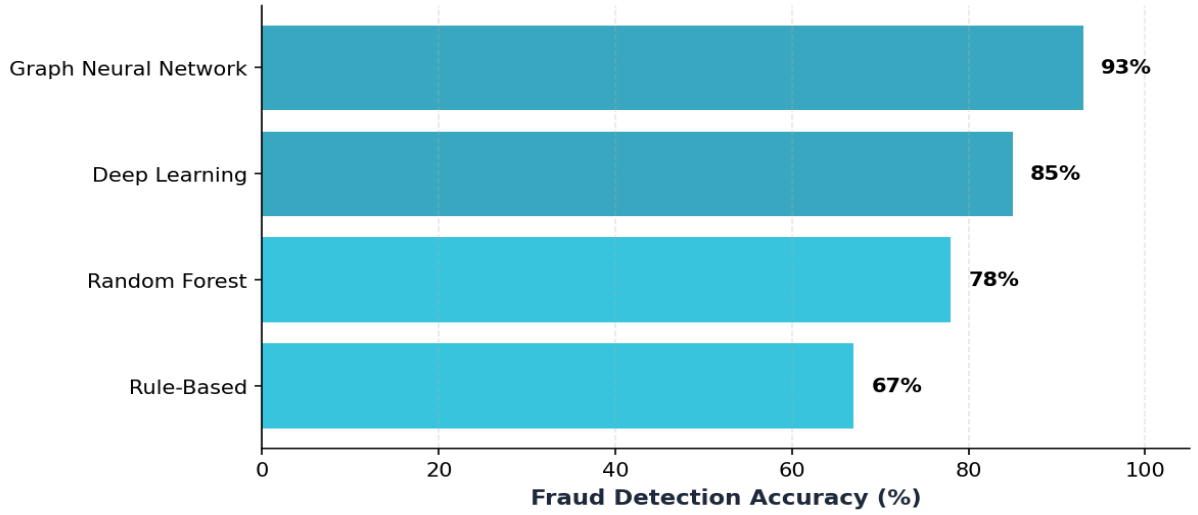
16,000+ Fraud Signals	**93%** Detection Rate	**0.8%** False Positive Rate
10M+ Nodes in Graph	**100M+** Edges Analyzed	**<200ms** Inference Time

Graph Neural Network Architecture

GNNs analyze three key graph types:

- **Identity Graph:** Device, IP, email, phone linkages
- **Behavior Graph:** Transaction patterns and sequences
- **Network Graph:** Merchant, user, and payment relationships

Fraud Detection Techniques



Sift's Technology: Processes 16,000+ signals through GNN architecture, achieving 93% fraud detection rate with only 0.8% false positives - critical for maintaining customer experience.

Key Innovation Areas

• Synthetic Identity Detection

- Link prediction algorithms identify fabricated identities
- Community detection reveals fraud rings
- Temporal pattern analysis spots suspicious account creation

• Real-Time Scoring

- Sub-200ms inference on transaction approval path
- Incremental graph updates for efficiency
- Model serving with TensorFlow or PyTorch