

# CHAPTER 10

Challenges, Opportunities, and Future Prospects



# INTERNET OF THINGS SECURITY

- Security Standardization
- Software or Code Integrity



# CLOUD COMPUTING BASED SECURITY SOLUTIONS

DDoS attacks in  
cloud- backed  
IoT

DDoS and  
communication  
overhead

Interior cloud  
DDoS attack

Instantaneous  
cumulative  
analysis of  
traffic flows

Commercial  
loss

SDN-based  
cloud solutions

DDoS-for-Hire  
service



## Challenges IoT Forensics

evidence identification

Data location

Data proliferation

Crime scene reconstruction

evidence collection

Nonstandard hardware/software

evidence analysis

End-to-end analysis

Integrity analysis

evidence presentation

Lifespan limitation

Transparency

attack attribution

Legal issues

Presentation

# CLOUD COMPUTING BASED SECURITY SOLUTIONS



# FOG COMPUTING BASED SECURITY SOLUTIONS



FOG  
INTELLIGENCE



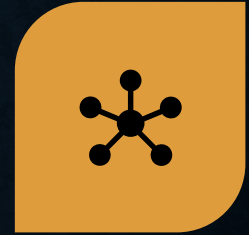
SECURITY ISSUES



PRIVACY ISSUES



MAINTENANCE  
ISSUES



INTEROPERABILITY  
ISSUES



# EDGE COMPUTING BASED SECURITY SOLUTIONS

Context-  
Informed  
Security

Microservices-  
based design

Mechanisms  
Orchestration  
and  
Standardization



# DEEP LEARNING FOR IOT SECURITY

The dataset  
scarcity

IoT Security  
Solution based  
on low-quality  
data

IoT security  
data  
Augmentation

Zero-day attacks

Enduring  
Learning

Transfer  
learning

Interdependent,  
interrelated, and  
collaborative  
ecosystems



# DEEP REINFORCEMENT LEARNING

Resistance against Adversarial reinforcement learning

```
graph TD; A[Resistance against Adversarial reinforcement learning] --> B[Deficient Perception Dilemma]; B --> C[Joint reward from multiple agents];
```

Deficient Perception Dilemma

Joint reward from multiple agents