

AI TACTICAL SKILLS: IOT HACKING & DEFENSE



This 5-day course will provide a robust foundation for integrating AI with IoT, enabling learners to create innovative and intelligent projects across various domains.

5 DAYS | **Online / In person / Hybrid** | **ALL LEVELS**

IOT Hacking & Defense course will prepare you to be able to:

EACH PARTICIPANT GETS:

- **HACKING TOOLKIT**
- **6 months access to Premier Private Lab-Range**

1. Understand the fundamentals of IOT and AI.
2. Set up and configure development boards for AI-enabled IOT projects.
3. Develop and deploy AI models for various IOT applications.
4. Build and integrate IOT systems for smart homes, industrial applications, and smart cities.
5. Analyze and visualize data from IOT devices using AI and cloud platforms.
6. Implement a comprehensive AI-enabled IOT solution as a capstone project.

CYBER2 LABS

WWW.CYBER2LABS.COM

INFO@CYBER2LABS.COM

*Build your AI
Tactical Skills*

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COURSE OUTLINE

- ▶ Module 1: **Introduction to AI and IOT**
 - Basics of IOT / Artificial Intelligence
 - Introduction to AI concepts and its importance in IOT
 - Overview of Machine Learning (ML) and Deep Learning (DL)
 - Key AI frameworks and tools for IOT (TensorFlow, PyTorch, OpenCV)
- ▶ Module 2: **Setting Up the Development Environment**
 - Introduction to IOT Development Platforms
 - AI for IOT hardware device options
 - IOT Communication Protocols
 - Detailed look at MQTT, HTTP, CoAP, and other protocols
 - Setting up a basic MQTT server
 - Connecting sensors and actuators to the development board
- ▶ Module 3: **Handling Data**
 - Delta Lake and Databricks
 - Data collection
 - Garbage data = no ML
 - Streaming data into IOT Hub
 - Z-spike anomaly detection
- ▶ Module 4: **ML for IOT**
 - IOT sensors with anomaly detection
 - Regression with IoT
 - Classifying sensor with decision trees
 - DL predictive maintenance
 - Face detection
- ▶ Module 5: **Deep Learning**
 - Analyzing traffic patterns using AI
 - Keras fall detection
 - LSTM to predict device failure
 - Deploying models
- ▶ Module 6: **AI Anomaly Techniques for IOT**
 - Z-Spikes using sense HAT on Rpi
 - Use of autoencoders in labeled data
 - Isolated Forest
 - Anomalies on the edge
- ▶ Module 7: **Cloud Integration and Data Analytics**
 - Integrating IOT with Cloud Platforms
 - Overview of cloud platforms (AWS IOT, Azure IOT, Google Cloud IOT)
 - Connecting IOT devices to the cloud

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► Module 8: **Computer Vision**

- OpenCV camera deployment
- Deep neural nets and Caffe
- Object detection with NVIDIA Jetson Nano
- PyTorch on GPU's

► Module 9: **NLP (natural language processing)**

- Speech to text
- Luis (language understanding with Microsoft)
- Deploying smart bots
- Enhancing bots with QnA

► Module 10: **Optimization of MCU**

- ESP32 for IOT in Azure
- Streaming ML with Kafka and Spark
- Enriching data with Kafka

► Module 11: **Deploying to the edge**

- OTA updates
- Offloading to the web with TensorFlow.js
- Mobile model
- Distributed ML using Fog computing



TARGET AUDIANCE

- Cyber Security engineers / analysts
- Network and system administrators
- Drone & Robotic Engineers & Developers
- Drone Operators
- Digital Forensics Investigators
- Penetration Testers
- Cloud computing personnel
- Cloud project managers
- Operations support looking for career advancement

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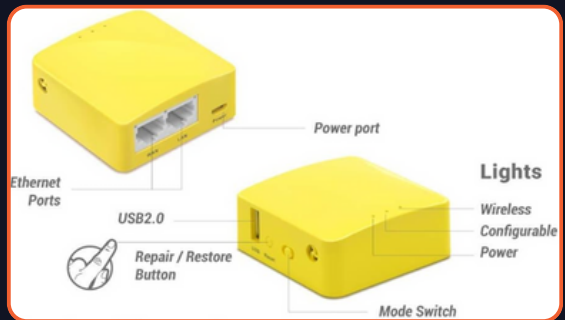
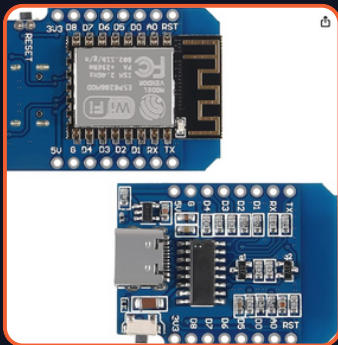


We will utilize in this course:

- ▶ A pre-built mobile hardware system such as a Raspberry Pi or a laptop
- ▶ Live Cloud based remote lab range and electronic interactive content

CYBER2 LABS IOT Hardware Toolkit

1. Mango WiFi router



2. Type-C ESP8266 Wemos D1 mini

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3. Raspberry Pi with WiFi



4. Wi-Fi USB Dongle Stick Adapter RT5370

5. Toolkit Case



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