



# IoT and Automation with Python: Comprehensive Training Program

Welcome to our comprehensive IoT and Automation training program. This 270-hour curriculum is designed to transform beginners into Junior IoT Engineers and Specialists ready for the industry. Throughout this presentation, we'll explore the various certification tracks available, their industry relevance, and the career opportunities they unlock.

Our program combines theoretical knowledge with hands-on projects to ensure you develop practical skills that align with current industry demands in smart manufacturing, healthcare, agriculture, and smart cities.

# Python Fundamentals

## Comprehensive Curriculum

From introduction to Python through advanced topics like OOP and API integration, culminating in a final project that demonstrates your skills.

## Diverse Career Paths

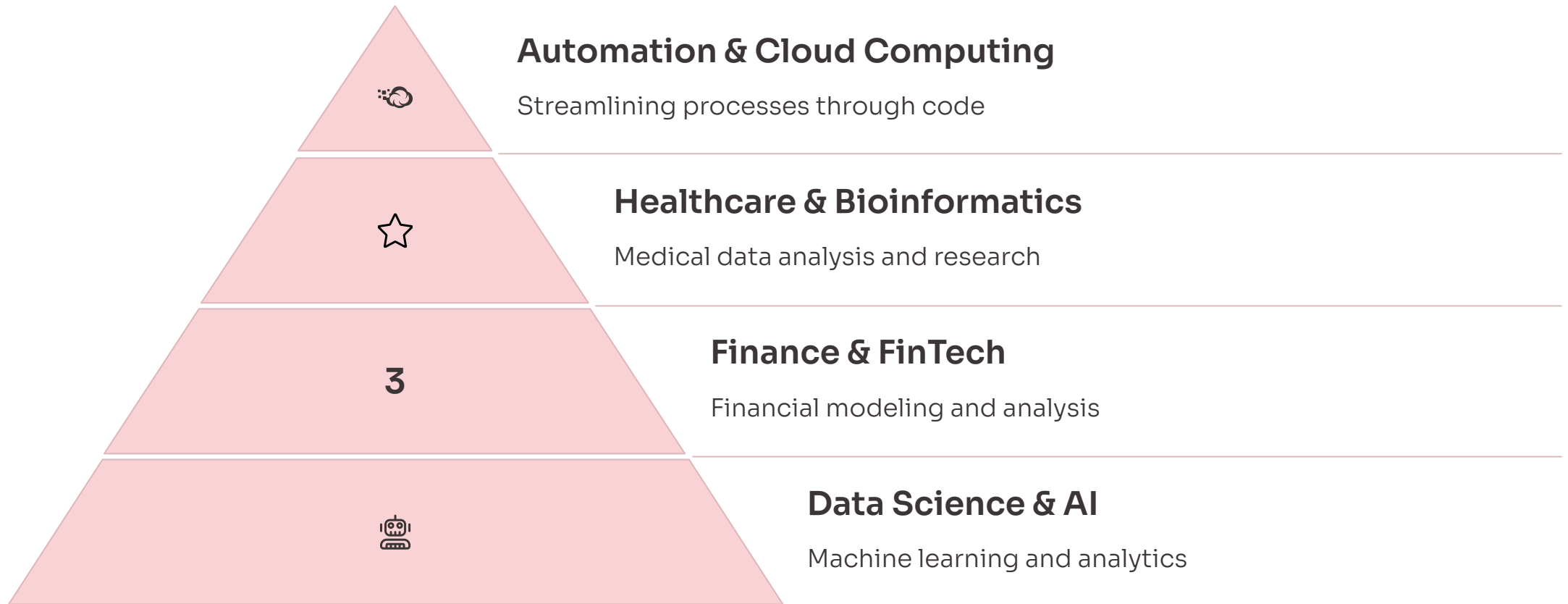
Qualify for roles including Python Developer, Data Scientist, Machine Learning Engineer, Web Developer, Automation Engineer, and DevOps Engineer.

## Lifetime Certifications

Earn recognized credentials like PCAP™ by Python Institute or IBM Python Certification that remain valid throughout your career.



# Python for Industry Applications



Python's versatility makes it invaluable across multiple industries. The language is widely accepted with recognized certifications from providers like Pearson VUE (IT Specialist) and IBM. Companies in technology, finance, healthcare, and other sectors highly value Python expertise for its ability to solve complex problems efficiently.

# IoT using Python

## Curriculum Highlights

- Python fundamentals through advanced concepts
- Working with IoT libraries and APIs
- Automation and scripting for devices
- Hands-on final project with real-world applications

## Career Opportunities

- IoT Developer
- Embedded Engineer
- IoT Architect
- Data Analyst
- IoT Security Specialist

## Industry Applications

- Smart Manufacturing
- Healthcare
- Agriculture
- Smart Cities

Certifications in this track are typically valid for 1-3 years, with government-certified options like STQC IoTSCS valid for 3 years. These credentials are provided by stem.org and enjoy high industry acceptance, particularly for their comprehensive coverage of Python in IoT contexts.

# IoT using Firebase



## Introduction to IoT and Firebase

Learn fundamentals and platform basics

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## Hardware Integration

ESP32/ESP8266 setup and sensor interfacing

3

## Firestore Realtime Database

Connect devices and implement monitoring

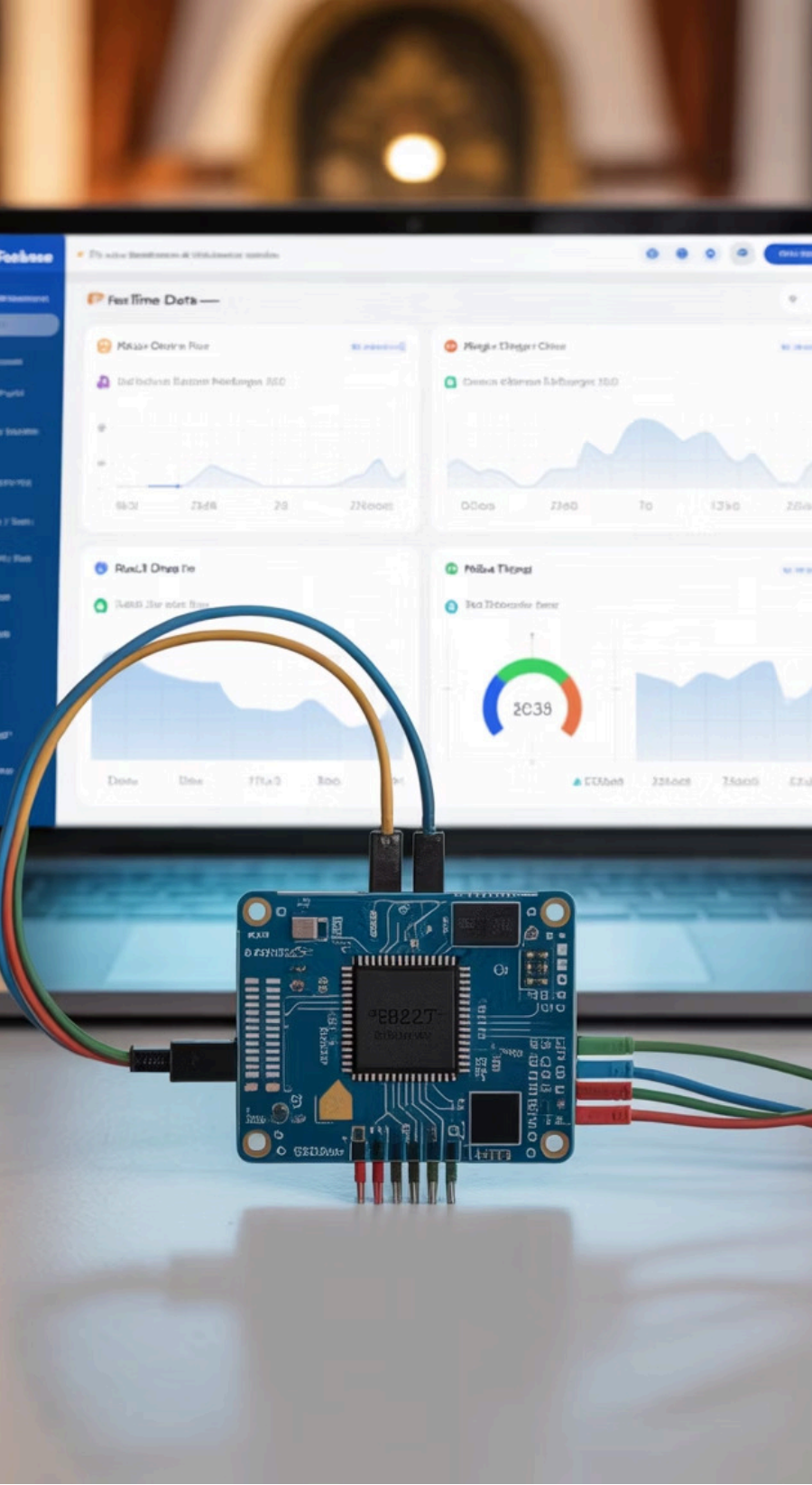
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## Capstone Project

Build a complete IoT solution

This track prepares you for roles including IoT Developer, Embedded Systems Engineer, Backend Developer, Full Stack Developer, and Cloud Solutions Architect. Google Firebase certifications are valid until May 2027, while STEM IoT certifications typically last 1-3 years depending on the institution.

Firestore is globally recognized, making these credentials valuable across smart manufacturing, healthcare, agriculture, and smart cities applications.



# IoT and Cloud

## Curriculum Focus

This track covers IoT fundamentals, hardware setup, cloud connectivity, data visualization, remote control, automation, and security fundamentals, culminating in a capstone project that demonstrates real-world application.

## Career Pathways

Graduates qualify for positions as IoT Developers, Cloud Engineers, DevOps Engineers, Cloud Solutions Architects, and IoT Security Specialists, working at the intersection of physical devices and cloud infrastructure.

## Certification Value

Certifications remain valid for 1-5 years depending on the issuing STEM organization. These credentials are widely recognized by industry for their comprehensive coverage of both IoT and cloud concepts.

This track is particularly valuable as cloud integration becomes essential for scalable IoT deployments across smart manufacturing, healthcare, agriculture, and smart cities applications.

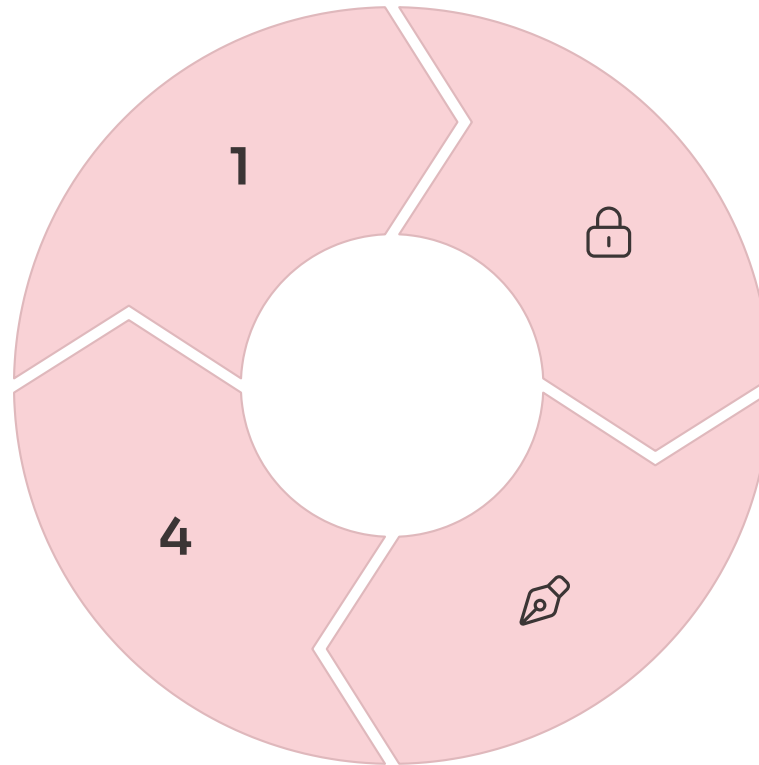
# IoT and Security Essentials

## IoT Security Fundamentals

Core security concepts for connected devices

## Security Analytics

Monitoring and responding to threats



## Threat Protection

Identifying and mitigating vulnerabilities

## Compliance Standards

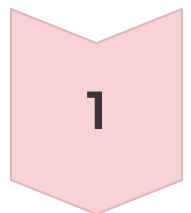
Meeting industry security requirements

Security is paramount in IoT deployments. This track prepares specialists for roles including IoT Security Analyst, Cybersecurity Engineer, IoT Compliance Engineer, and Security Consultant. Certifications typically remain valid for 1-3 years and are provided by stem.org.

The curriculum covers essential security concepts alongside core IoT technologies, ensuring graduates can build secure systems for smart manufacturing, healthcare, agriculture, and smart cities.

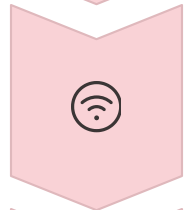


# IoT and Networking



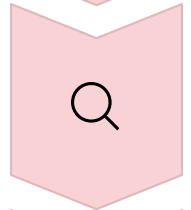
## Networking Basics for IoT

Fundamental concepts for connected devices



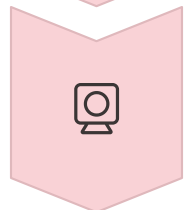
## Wireless Communication

Technologies enabling device connectivity



## IoT Communication Protocols

Standards for device interoperability



## Network Security

Protecting connected infrastructure

This specialized track focuses on the networking aspects of IoT, preparing graduates for roles as IoT Network Engineers, Embedded Systems Engineers, Cloud Operations Engineers, and Connectivity & Network Engineers. Certifications remain valid for 1-3 years and are provided by stem.org.

The curriculum ensures professionals can design, implement, and troubleshoot the complex networks that underpin IoT deployments across various industries.



# Exit Profile: Junior IoT Engineer/Specialist



## System Design

Creating IoT architectures and solutions



## Implementation

Building and deploying connected systems



## Hardware Integration

Working with sensors and microcontrollers



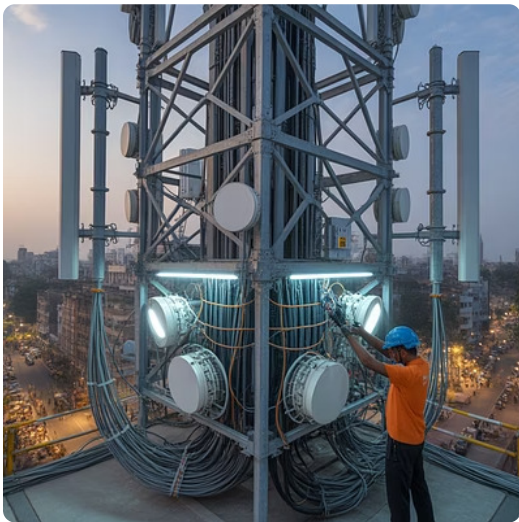
## Connectivity

Ensuring smooth data flow between devices

Upon completing our 270-hour program, graduates emerge as Junior IoT Engineers/Specialists capable of designing, developing, and implementing Internet of Things systems. They work with sensors, microcontrollers, and communication protocols to build connected systems that ensure smooth data flow and device interoperability.

This role represents an entry point into a rapidly growing field with diverse applications and significant career growth potential.

# Industry Alignment and Program Duration



Junior IoT Engineers/Specialists are key professionals in multiple industries, including smart home technology, automotive (connected vehicles), healthcare (wearable devices), manufacturing (Industry 4.0), telecommunications, and energy and utilities.

Our comprehensive 270-hour program ensures graduates have both the theoretical knowledge and practical skills needed to succeed in these diverse environments. The curriculum balances technical depth with industry-relevant applications to prepare you for immediate contribution in the workplace.