Cognixia®

Enterprise IoT

www.cognixia.com

About Cognixia

Cognixia- A Digital Workforce Solutions Company is dedicated to delivering exceptional trainings and certifications in digital technologies. Founded in 2014, we provide interactive, customized training courses to individuals and organizations alike, and have served more than 100,000 professionals across 37 countries worldwide.

Our team of more than 4,500 industry experts facilitate more than 400 comprehensive digital technologies courses, along with state-of-the-art infrastructure, to deliver the best learning experience for everyone. Our comprehensive series of instructor-led online trainings, classroom trainings and on-demand self-paced online trainings cover a wide array of specialty areas, including all of the following:

- IoT
- Big Data
- Cloud Computing
- Cyber Security
- Machine Learning
- AI & Deep Learning
- Blockchain Technologies
- DevOps

Cognixia is ranked amongst the top five emerging technologies training companies by various prestigious bodies. We're also an MAPR Advantage Partner, Hortonworks Community Partner, RedHat Enterprise Partner, Microsoft Silver Learning Partner and an authorized training partner for Dell EMC, Pivotal, VMware and RSA technologies.

OUR AWARDS & AFFILIATIONS

Best Workplace Amongst Emerging Enterprises Awarded By **Great Indian Workplace Awards** – 2018
Mumbai, India

Best Training Provider of the Year
Awarded By
The Golden Globe Tiger Awards – 2018
Kuala Lampur, Malaysia

World HRD Congress has awarded for Excellence in Training (Asia)

WORLD HRD CONGRESS
Cognixia is awarded as Training Company of the Year, 2018

ISO 9001:2015 CERTIFIED
ISO 9001:2015 Certified Quality Management System

ISO
ISO/IEC 27001:2013 Certified Information Security Management System

AFRICA LEADERSHIP EXCELLENCE
Best Emerging Technology Training Organization at the Middle East Training & Development Leadership Awards 2018

TOP 5 CLOUD TRAINING INSTITUTIONS INDIA 2016 — HIGHER EDUCATION Review

TOP 5 Big Data TRAINING INSTITUTES 2017 — siliconindia

TOP 10 PROMISING IoT TRAINING INSTITUTES IN INDIA 2017 — HIGHER EDUCATION Review

Top 10 IoT Training Companies for the **Second consecutive year.** — 2017 IoT India MAGAZINE

siliconindia BEST TRAINING PROVIDER
BIG DATA HADOOP DEVELOPER OF THE YEAR 2016

Top 10 IoT Training Institutes – 2016
Analytics India MAGAZINE

Asian Training & Leadership Award, Dubai

TOP 5 Emerging Technologies TRAINING COMPANIES 2016 — siliconindia

AUTHORIZED TRAINING PARTNERS FOR

Red Hat | MAPR | HORTONWORKS PARTNERWORKS CONSULTANT COMMUNITY | Silver Microsoft Partner

AUTOMATION ANYWHERE | ITIL® | (ISC)²®

Enterprise IoT

Industries and businesses are experiencing a massive shift with automation, predictive analysis, machine learning, cloud technologies, Internet of Things (IoT) and many other emerging technologies. Of these, IoT has created a global network of smart objects equipped with sensors and actuators that can interact and respond to the physical environment around. Experts predict that by 2021, more than 25 billion devices will be connected around the world and it will grow to 75.44 billion by 2025. This massive rise in the adoption of IoT has resulted in a great demand of professionals that are proficient in working with this technology and capable of building integrated solutions to meet business requirements. For this, Cognixia presents the Enterprise IoT training course that explores IoT from an architect's perspective.

Industry Trends

A KPMG survey of 750 tech leaders reports the greatest business transformation to have taken place due to IoT.

The number of connected devices in use will exceed to 14.2 billion by the end of 2019, and will grow to more than 25 billion by 2021 - Gartner

Business-to-Business IoT segments will generate more than USD 300 billion annually by 2020 and USD 85 billion in the industrial sector – Bain

The global IoT market will attain a CAGR of 28.5% by the end of 2020 - Forbes

By 2023, the buying and selling of IoT data will become an essential part of many IoT systems – Gartner

Worldwide IoT spending is predicted to reach 1.1 trillion USD by 2021 - IDC

Why become an IoT Expert?

The rapid adoption of IoT across industries has created a huge demand for professionals that can work with IoT. The widening skills gap in the field is creating massive job openings that offer heavy salaries. Becoming an IoT expert with Cognixia's 'Enterprise IoT' training will equip participants with the knowledge and skills essential to work on various IoT segments, improving their hiring potential manifold.

Eligibility/Prerequisites

Participants need to have successfully completed the IoT Advanced course with Cognixia or have equivalent skills as below -

- Familiarity with IoT terminologies
- Knowledge of IoT device design/knowledge of prototyping using open source prototyping boards like Arduino
- Knowledge of sensors, microcontroller and communication technologies like Wi-Fi
- Conceptual knowledge of networking and internet communication
- Basic knowledge of architecting IoT solution

Target Audience

- Any individual keen to build a career in IoT, having a background in engineering and technology (IT, electronics, mechanical engineering, etc.)

DETAILED CURRICULUM : MODULES

Module 1: Introduction - Concepts and technologies behind Internet of Things (IoT)

- Internet of Things – history and evolution
- IoT use-cases
- Economic potentials
- Future trends

Module 2: IoT Reference Architectures

- IoT Network and Device
- Platform and Application Architecture
- Open source initiatives
- Industry 4.0 - Reference Architecture
- Reference Architectural Model of Industry 4.0 - IIRC, Industrial Internet Consortium (IIC), Industrial Internet Reference Architecture (IIRA)

Module 3: Data Representation & Modeling

- Understanding Data, Information, Knowledge and Wisdom (DIKW Pyramid)
- Types of data
- Physical and logical representation of data
- Natural languages – Symbolic representation
- Computer languages – Data encoding, storage and interpretation
- Structured and unstructured data

Module 4: IoT Data Collection & Storage

- IoT Devices – Sensor and control nodes
- Data collection & processing – Edge & Cloud
- Web services architecture and protocols – HTTP & MQTT

Module 5: Edge Computing and IoT Brokers

- Understanding IoT enterprise architecture
- Data aggregation, processing and analytics at the edge
- Addressing IT and OT integration
- IoT brokers
- AWS Greengrass and Azure IoT edge solutions

Module 6: IoT Analytics

- Selection of sensor to capture right set of data
- Handling of sensor data
- Analog to digital conversion
- Event detection
- Data pre-processing
- Integration of different data sources
- Heterogeneity and distributed nature
- Limitations of Sensor Nodes
- Real-Time/Streaming Analytics , Descriptive, Diagnostic, Predictive and Prescriptive
- Analytics/Machine Learning using Python advance packages: NumPy, SciPy, Matplotlib, Pandas and Sci-kit learn

Module 7: Introduction to Python & Python Fundamentals

- Python: History and background
- Python IDEs
- Anaconda Python distribution

Module 8: Jupyter notebook

- Introduction
- Setup and getting started

DETAILED CURRICULUM : MODULES

Module 9: Python data types and basic data structures
- Data handling in Python
- Dynamic typing feature of Python
- Sequences and data structures - Strings, lists, tuples, dictionary and sets

Module 10: Operators
- Arithmetic assignment
- Comparison
- Logical (or Relational) operators
- Conditional (or ternary) operators

Module 11: Conditional statements/Control structures
- If , If-elif structures
- While and For loops
- The range() Function
- Break and Continue Statements, and Else clauses on Loops
- Pass statement

Module 12: Python Functions
- Local variables
- Default argument values and Returning values
- Keyword & Positional arguments
- Arbitrary argument lists
- Documentation strings
- Unpacking argument lists

Module 13: Functional Programming
- Lambda functions
- List comprehension
- Map, apply, reduce & filter

Module 14: File handling and other OS interactions
- Opening a File
- Reading from a file
- Writing to a file
- Closing a File
- File handling using With statement
- Reading directories & other basic directory operations (getcwd, mkdir, chdir etc.)
- Renaming & deleting files

Module 15: Python Modules
- Building modules
- Executing modules as scripts, The Module Search Path
- Compiled' Python files
- Standard Modules
- The dir() Function
- Packages

Module 16: Introduction to OOP
- OOPs fundamentals
- Class definition syntax, Class objects, Instance objects, Method objects; Instantiation
- Data Member – Class variable/Instance variable
- Function and Operator overloading
- Inheritance

Module 17: Exceptions
- Handling Exceptions
- Try-except, Else clause and Finally clause
- Raising Exceptions
- User-defined Exceptions

DETAILED CURRICULUM : MODULES

Module 18: Python Data Science Packages

- **NumPy**
  - One-dimensional arrays, Multi-dimensional arrays
  - NumPy arrays compared to Python lists
  - Modifying parts of an array

- **Pandas**
  - Series and DataFrames
  - Accessing elements from a series
  - Series alignment
  - Element-wise operations
  - Creating a DataFrame from NumPy Array, Series CSV files
  - Getting columns and rows
  - Data wrangling

- **IoT data – Descriptive analytics using Pandas**
- **Plotting with Matplotlib and Seaborn**

Module 19: Machine Learning using Python

- What is Machine Learning?
- Introduction to Machine Learning
- Types of Machine Learning
- Basics of statistics and linear algebra
- Supervised machine learning – Regression, Classification
- Unsupervised learning – Clustering
- Dimensionality reduction
- Model performance evaluation
- Time series analysis – IoT data
- Predictive maintenance IoT system application and case study

Module 20: Cloud computing and platforms

- Public, Private and Hybrid cloud platforms and deployment strategy
- IaaS, SaaS, PaaS models
- Cloud components and services
  - Device connectivity & management
  - Cloud brokers
  - Rules Engines
  - Databases
  - Visualization
  - Reporting
  - Notification/Alarm management
- Example platforms: AWS IoT, Microsoft Azure

Module 21: IoT Security

- Overview of security and privacy in Information System
- Principles of IoT security
- IoT security guidance
- Identify the known threats, risks, vulnerabilities and privacy issues
- Security architectures

Participants will be provided with a customized IoT kit that contains:

1. **Development Boards**
   a. Raspberry Pi
   b. NodeMCU

2. **Electronic Components**
   a. Sensors – Analog temperature sensor(LM35)
   b. Memory Card (16 GB)
   c. HDMI – VGA Converter
   d. 1A Power Adapter
   e. SD Card Reader
   f. IR Proximity Sensor
   g. Breadboard
   h. Connecting leads (25)

Cognixia USPs

- LIFETIME LMS ACCESS
- 24 x 7 SUPPORT
- REAL-LIFE PROJECTS & CASE STUDIES
- INDUSTRY EXPERTS AS TRAINERS
- INDUSTRY STANDARD CERTIFICATE

POTENTIAL CAREER OPTIONS

- Chief Internet of Things Officer (CIoTO)
- IoT Business Designer
- IoT Engineer – oops
- IOT Architect
- IOT Solution Architect
- Embedded Systems Engineer for IoT
- Team Lead IoT Engineer
- IoT Business Process Consultant

Enterprise IoT

Cognixia®

To learn more visit
www.cognixia.com