How to Build an Excellent Career in Embedded Systems and IoT?

Workshop-1

Jayakumar Balasubramanian
Emertxe Information Technologies,
Bangalore

ΣMERTXE

Introduction

Company Overview

- **About company:** Established in 2003, located in Bangalore

- Focus of the company:

  - Education / Training programs – Entry level engineers, Working professionals and Corporate
  - Project development / Consultancy in areas like Embedded Systems & IoT

- Core team consist of industry veterans in working with companies like HP, Samsung, Huawei and GE

- Highly passionate team to impart knowledge sharing and bridging industry-academia gap

- Accredited with National Skill Development Corporation (NSDC) under Electronics Skill Sector Council of India (ESSCI)

ΣMERTXE

Speaker Profile

- B.Tech (CSE) from NIT, Warangal in 2001

- Started career with Ishoni Networks, HP and Huawei. Worked on core Embedded industry in domains like consumer networking, Printers and Telecom devices

- Involved in all phases of product development from concept to commercial launch

- Played various roles like Technical Leader, Project / Program Manager and Embedded Linux Group manager

- Highly passionate about skill building and contributing to industry-academia gap

- Invited speaker in popular Electronics and EdTech conferences

EMERTXE

RESULT: Certification

Workshop-3

Workshop-2

Workshop-1

Make inform decision. Remember career choices are for next 30+ years of your life. Seek mentoring / support

W3: How to build an end-to-end solution in IoT? What skills are required? Connect all the dots

W2: Creating an excellent resume to impress your employer. YOUR resume is YOUR brand

W1: Big picture and getting a view of various career possibilities in Embedded /IoT

Current Situation

We are getting into recession. What about my future?

What can I do in the given situation?

Too many job losses. I am fresher with no experience

Who can help me? I need some mentoring

When this is going to end?

EMERTXE

Looking back...
During difficult times

9/11 : Y2K jobs

2001

2020

Covid : Wait and watch

2008

Lehman : Low end manual jobs

ƩMERTXE

Why Embedded & IoT are here to stay?

Embedded Systems
Jobs landscape

Embedded Systems - Market Size

- Consumer Electronics — 26%
- Communication Equipments — 34%
- Computer and Peripherals — 15%
- Semiconductor — 6%
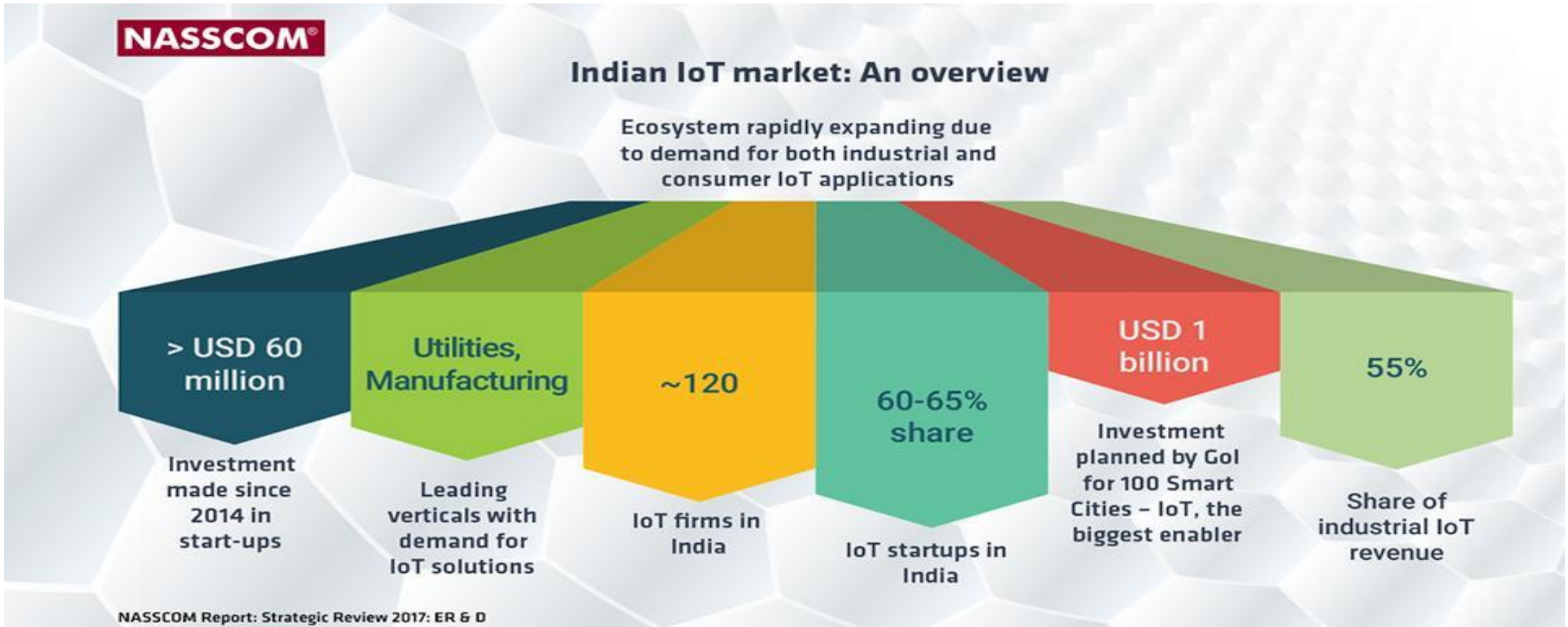- Others — 19%
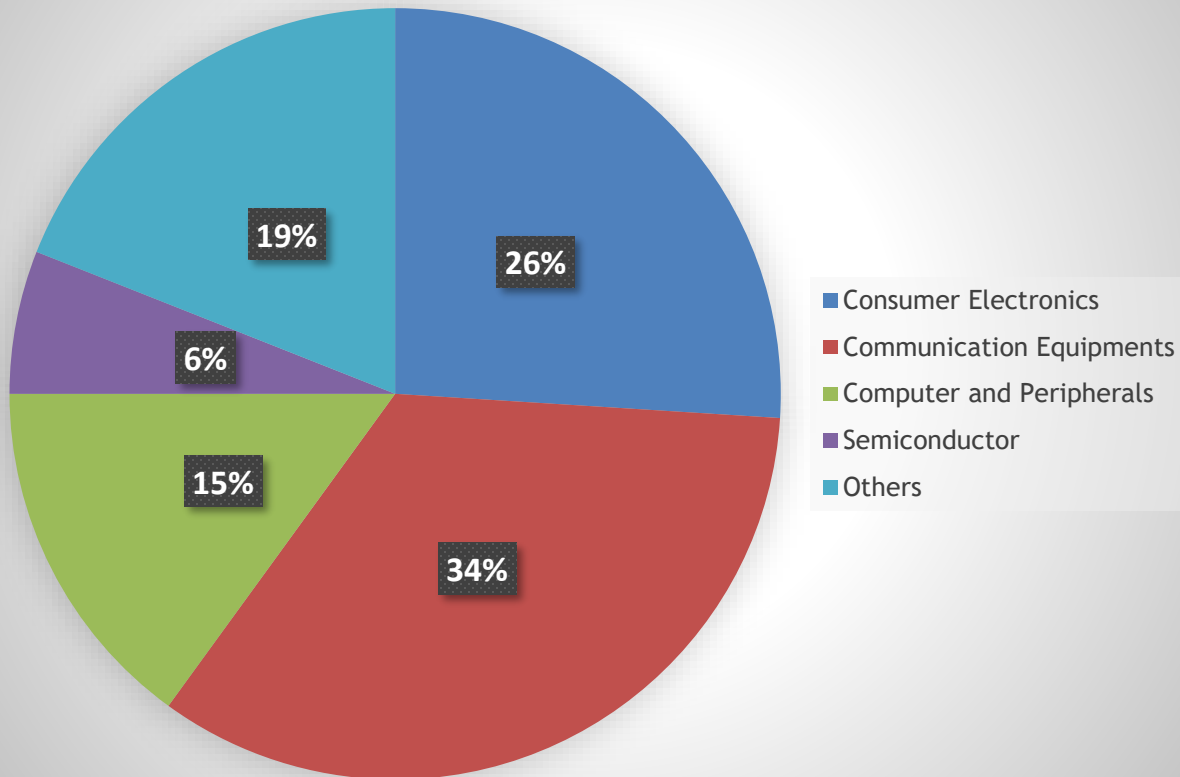
- Indian electronics market to sized at 400 Billion USD by 2020*

- It is growing at 25% Compounded Annual Growth Rate (CAGR)

- 47.9% of the market spend is going to be on Design & Manufacturing of Embedded Devices

- More than 60% of the devices would require "smart" Embedded Software running in them

- More than 7 Lakhs Embedded Systems jobs available in the market

- Global market size exceeds more than 1 Trillion USD by 2020

Internet-Of-Things(IoT)
Jobs Landscape

NASSCOM

Indian IoT market: An overview

Ecosystem rapidly expanding due to demand for both industrial and consumer IoT applications

> USD 60 million
Investment made since 2014 in start-ups

Utilities, Manufacturing
Leading verticals with demand for IoT solutions

~120
IoT firms in India

60-65% share
IoT startups in India

USD 1 billion
Investment planned by GoI for 100 Smart Cities – IoT, the biggest enabler

55%
Share of industrial IoT revenue

NASSCOM Report: Strategic Review 2017: ER & D

- Demand for IoT talent has gone up by more than 300% in the last three years (2014 – 2017) in India*
- There are more than 10 million jobs will be created in the next few years*

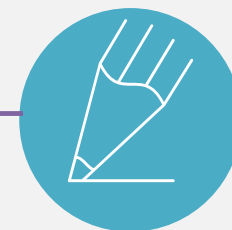*Source – Economic Times*

Embedded & IoT
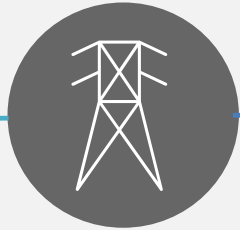## Various Domains

Retail

Environment

Industrial

Smart City

Education

Automotive
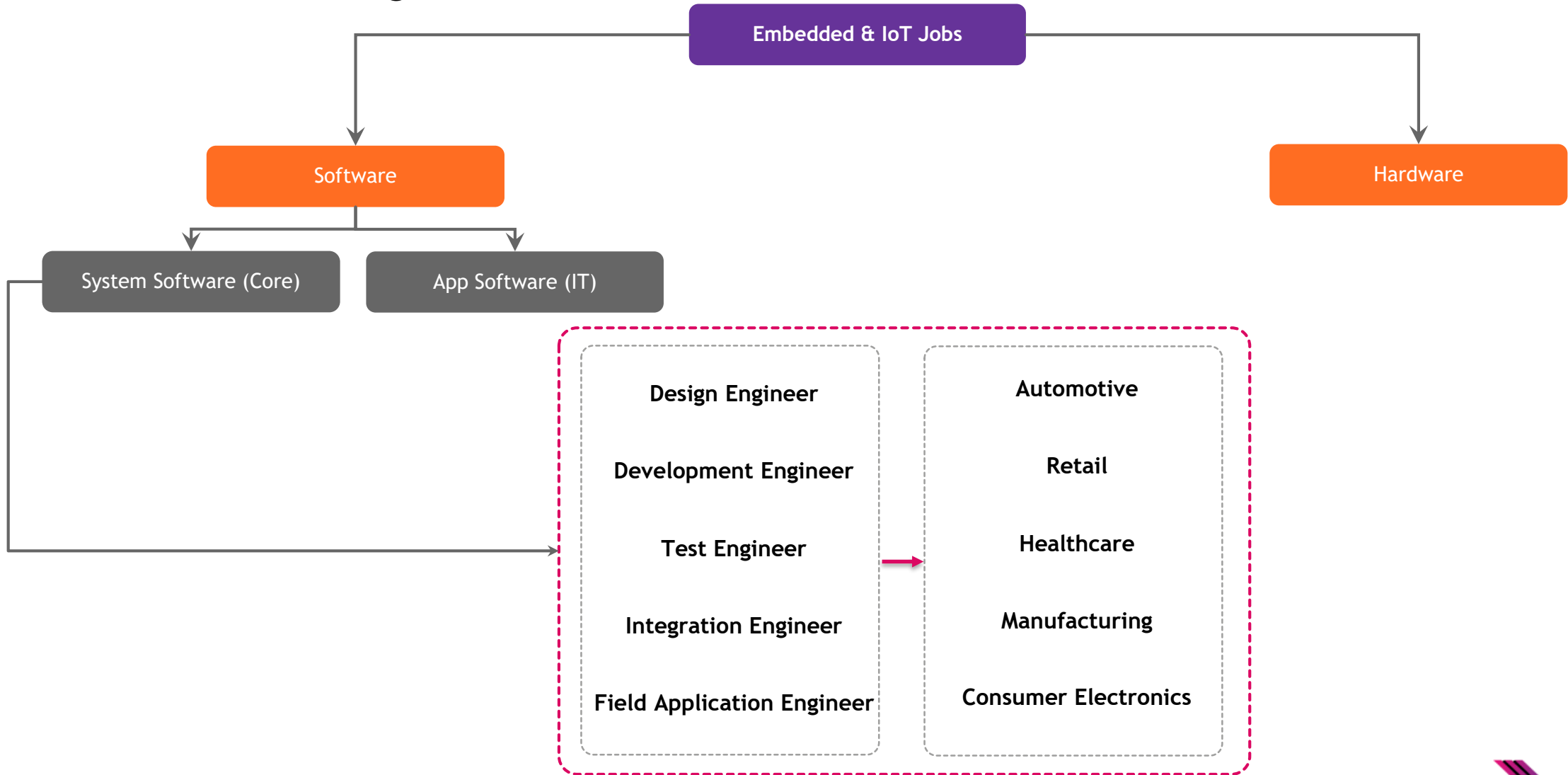
Power

Health Care

Logistics

Smart Home

Agriculture

Energy

EMERTXE

Career Possibilities

Career Possibilities
What I will be doing?

Embedded & IoT Jobs

Software

Hardware

System Software (Core)

App Software (IT)

Design Engineer

Development Engineer

Test Engineer

Integration Engineer

Field Application Engineer

Automotive

Retail

Healthcare

Manufacturing

Consumer Electronics

Emertxe Information Technologies, Bangalore

ΣMERTXE

Importance of skill building

ECIP: Transition Journey

1. Foundational Skills
2. Domain Skills
3. Projects to showcase
4. Core Embedded / IoT Engineer

EMERTXE
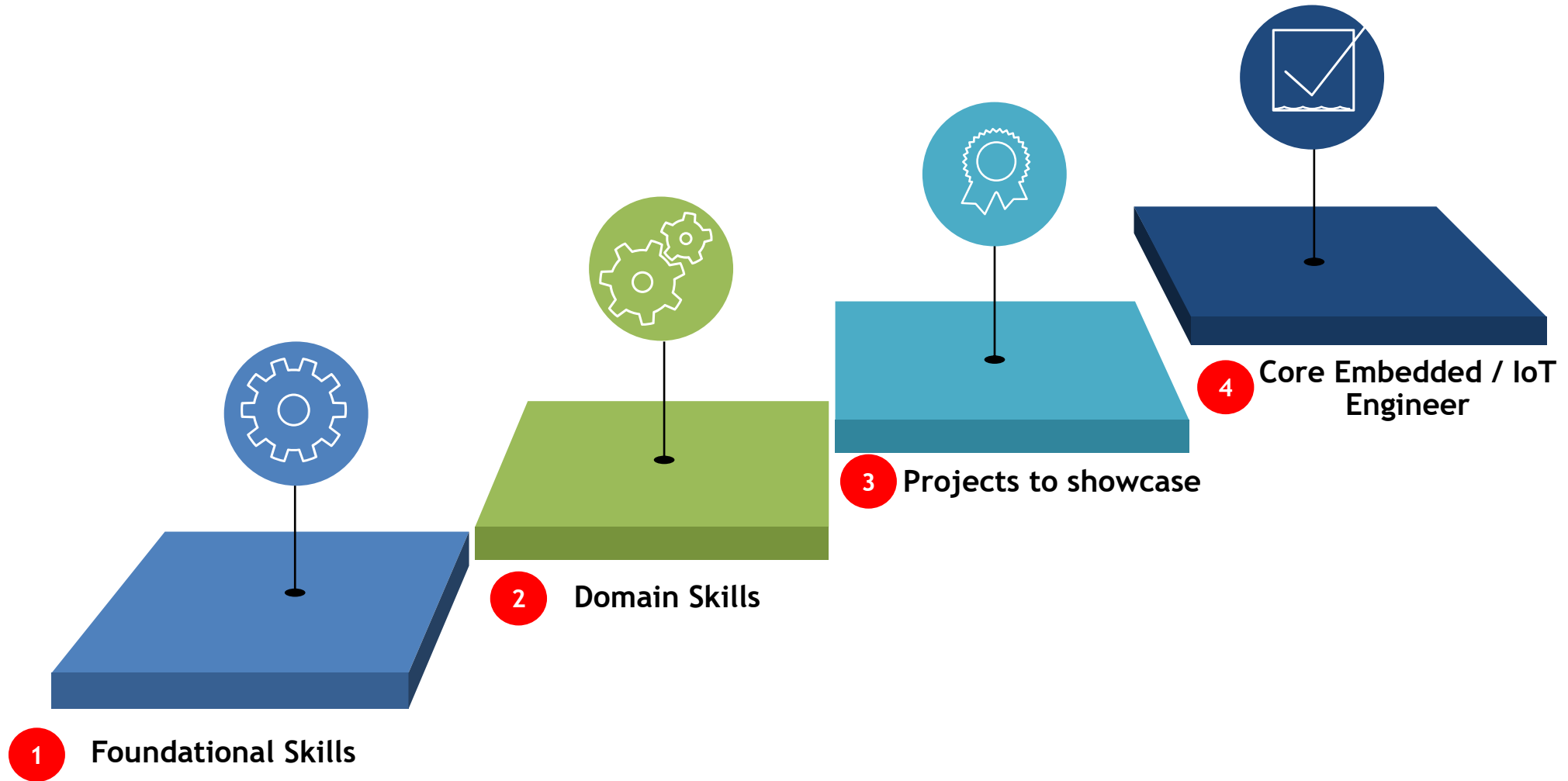
Embedded Skillsets

Get-Exposure: Know about Programming / Hardware / OS / Peripherals / Interfacing / Applications / Porting

"Get-hands-on" : Electronics & Embedded
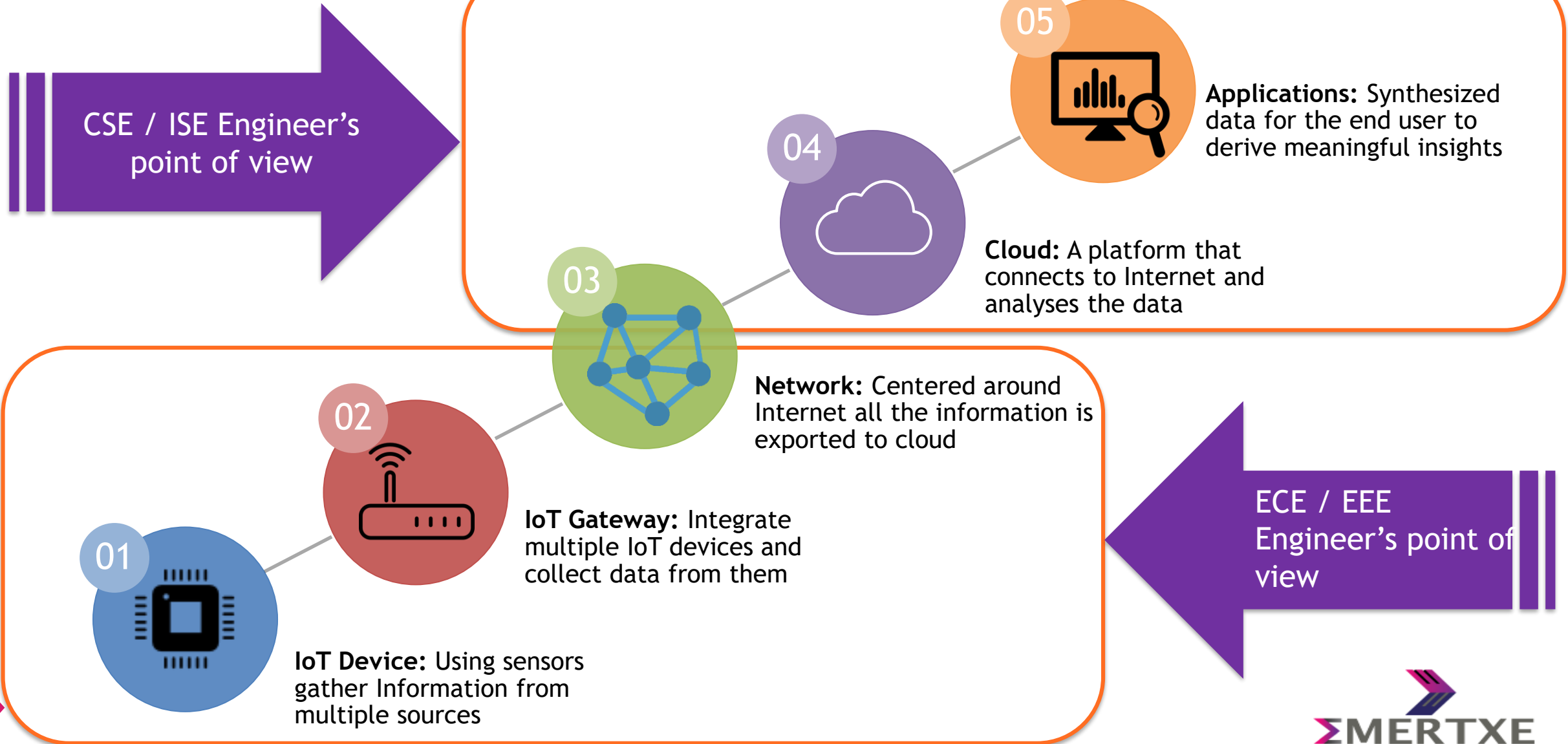
Embedded – Full Stack IoT

- Linux Systems

- Advanced C Programming

- C++ Programming

- Data Structures and Algorithms

- Micro-controller programming using PIC

- Linux Internals and TCP/IP Networking

- Embedded Linux on ARM

- Programming using Qt

Build YOUR Embedded Portfolio

- Complete Embedded skill-set

- Problem Solving Skills

- 7-8 projects

- Programming and interfacing using PIC MCU

- Multi-tasking Applications using ARM based Linux

- Open S/W (Ex: Linux skills) & Open H/W (Ex: BeagleBone Black)

- IDE / Development tools

EMERTXE

IoT components

05 **Applications:** Synthesized data for the end user to derive meaningful insights

04

Cloud: A platform that connects to Internet and analyses the data

03

Network: Centered around Internet all the information is exported to cloud

02

IoT Gateway: Integrate multiple IoT devices and collect data from them

ECE / EEE Engineer's point of view

01

IoT Device: Using sensors gather Information from multiple sources

ΣMERTXE

IoT Skillsets

"Get-hands-on" : Electronics & Embedded
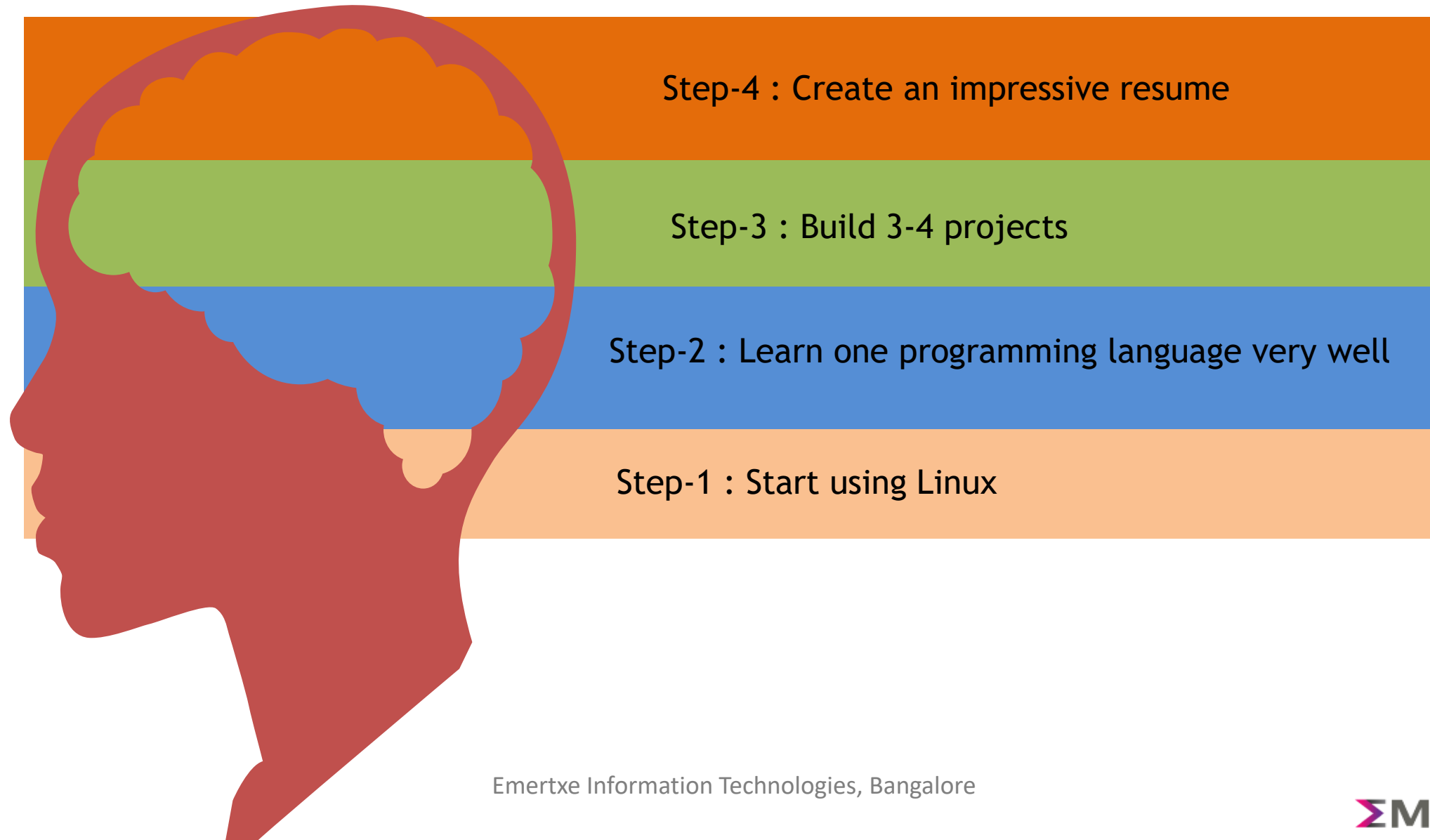
Embedded – Full Stack IoT

- IoT Architecture

- Setting up IoT workflows

- Advanced C Programming

- Micro-controller programming using Arduino

- Python programming

- Building IoT applications using Raspberry Pi

- IoT Cloud Infrastructure

- Performance and Security in IoT

## Build YOUR resume – IoT Developer

- Complete Embedded IoT skill-set

- Problem Solving Skills

- 7-8 projects

- Ability to program a controller / gateway

- IoT protocols & integration knowledge

- Open S/W (Ex: Linux skills) & Open H/W (Ex: Raspberry-pi)

- IDE / Development tools

Emertxe Information Technologies, Bangalore

EMERTXE

How and where to start?

Step-4 : Create an impressive resume

Step-3 : Build 3-4 projects

Step-2 : Learn one programming language very well

Step-1 : Start using Linux

Emertxe Information Technologies, Bangalore

EMERTXE

How we can help?

1. Awareness workshops

2. Resume building and templates

3. Give demo-workshop of a real-time IoT use-case

4. Access to technical resource library: Link

5. Access to YouTube channel tutorials: Link

6. Answer your queries and questions
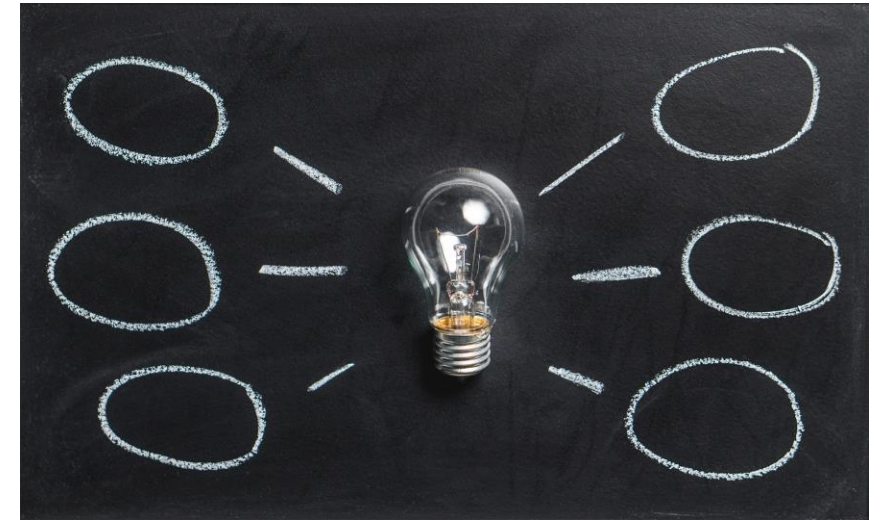
ƩMERTXE

Contact Details

Name	Designation	Email ID	Phone Number
Smitha S	Student Counsellor	training@emertxe.com	80955 57333

Office Address:
Emertxe Information Technologies,
#83, Farah Towers,
1st Floor,
MG Road,
Bangalore – 560001
Landline: 080 41289576

ΣMERTXE

Quiz Time