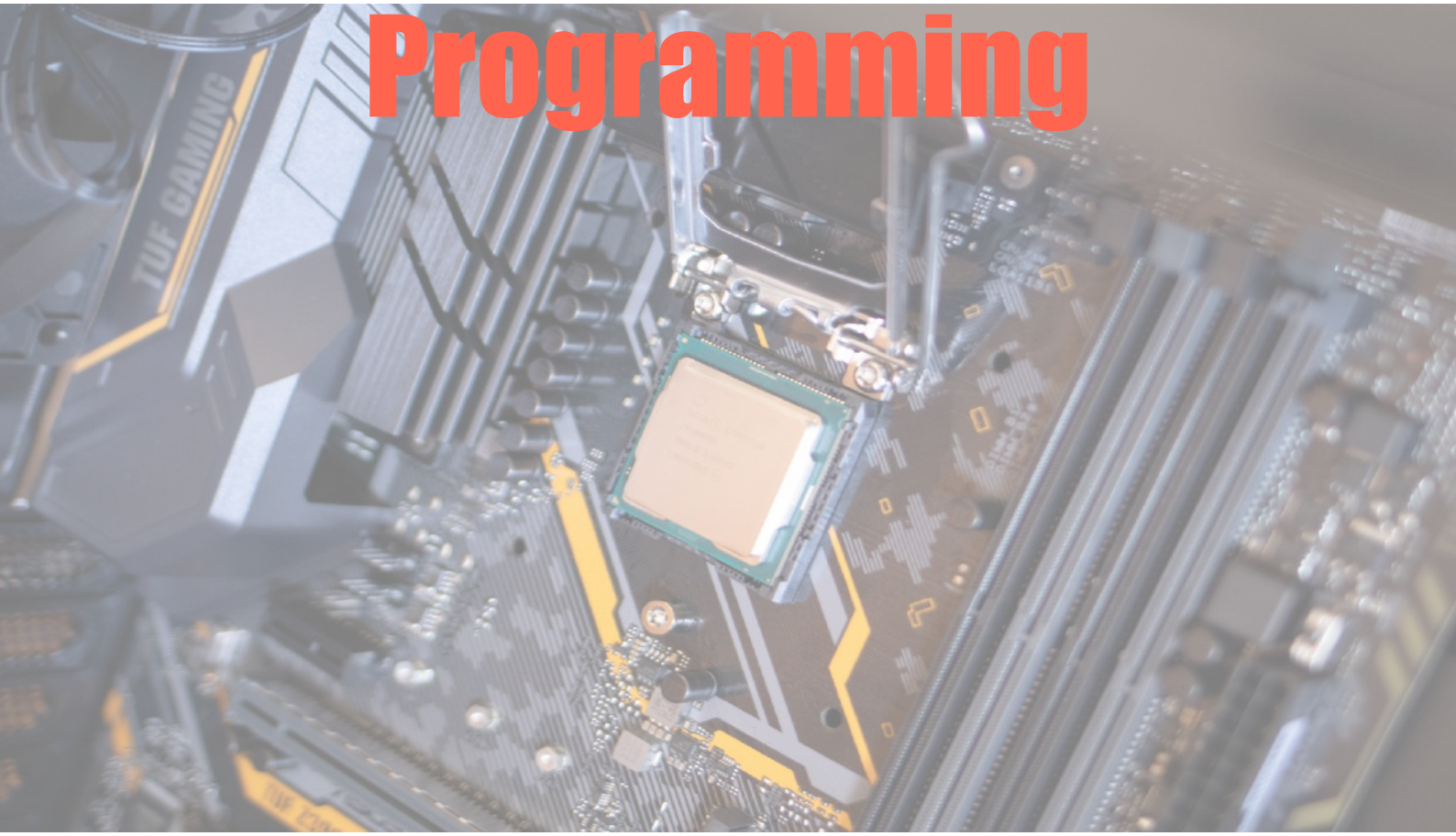
Embedded C Programming



Training by the Industry

AIBOT INK™

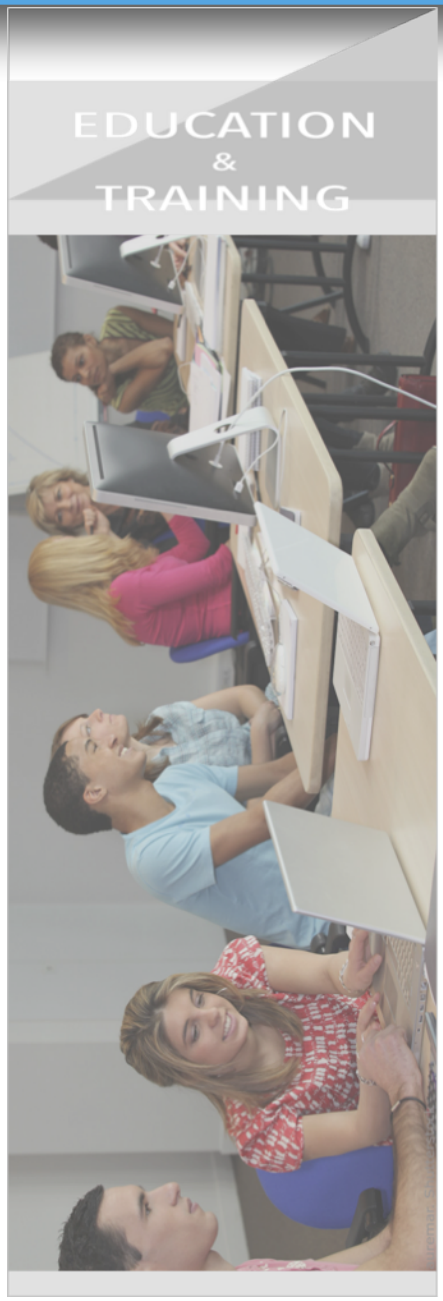
Innovating The Future

Aibot Ink is a fast growing innovative company formed by the team of veterans and scientists who are passionate, visionary and deep-rooted with the heart to serve the society by means of technology. We believe that technology is not only for big giants and multinational companies, but it has to be available, accessible and affordable to every individual in the society.

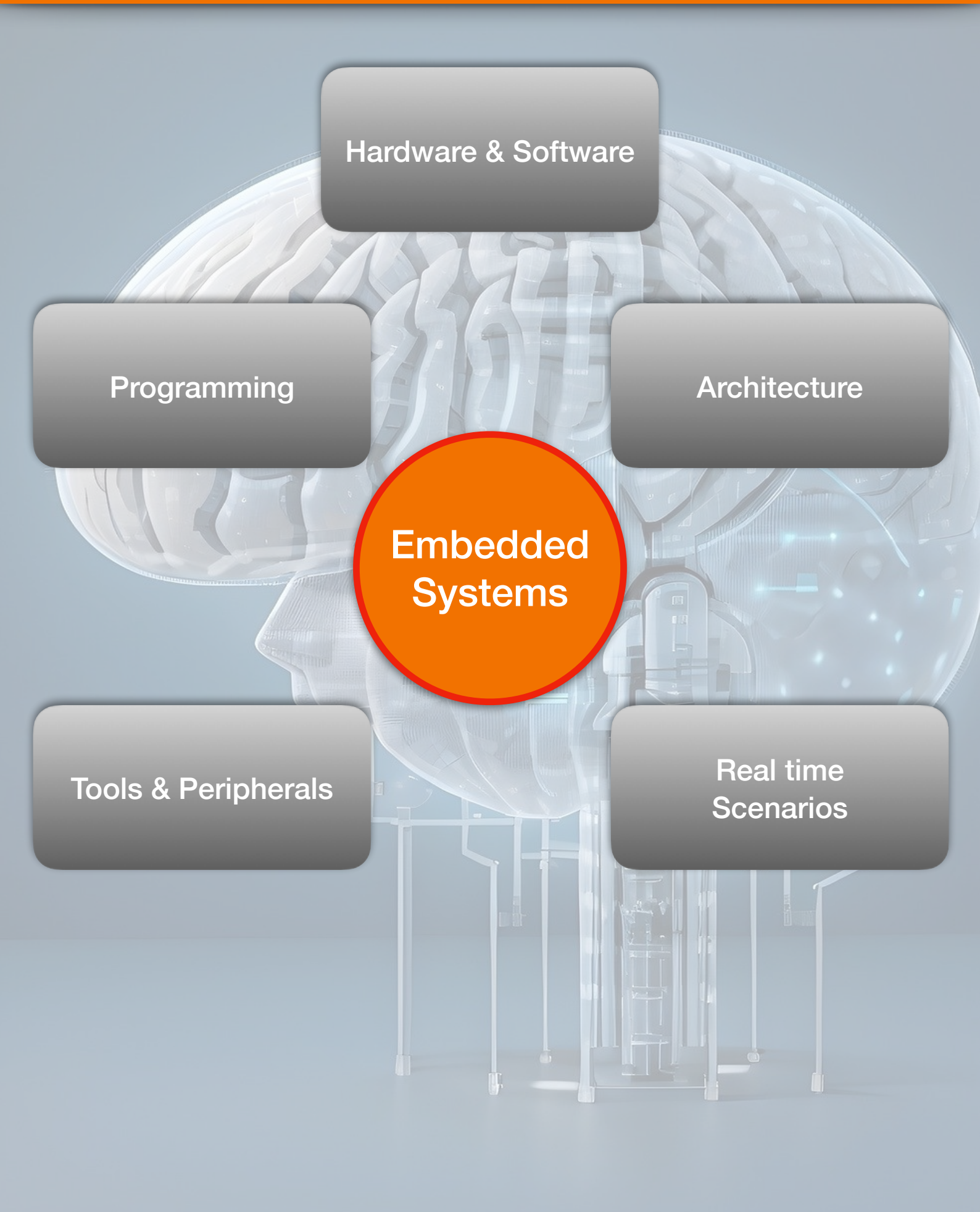
We research, innovate, develop and manufacture the most advanced, reliable and helpful technology solutions in the field of Aviation, Automation and Alternate energy resources and applications.

We are a team of diversified and multi talented professionals who are deeply passionate to invent new technologies and innovate the solutions for every individual and organisations to live harmoniously on this planet.

Our education division focuses on both academic as well as professional training. We conduct training for students as well as the fresh graduates including the working professionals who want to upgrade their skills as per the current trend and demand.



Overview


Hardware & Software
Programming
Architecture
Embedded Systems
Tools & Peripherals
Real time Scenarios

Course Modules

M1- Data Structures & Algorithms:

- Introduction to Data Structures
- Algorithms and Abstract Data Types
- Complexity of Algorithms, Linked Lists, Stacks, Queues
- Searching and Sorting Algorithms
- Hashing
- Trees

M2 - Embedded C Programming

- Basics of Program Writing & Coding Practices
- Overview of C Programming language
- Introduction to GNU Toolchain and GNU Make utility
- Linux environment and vi editor
- Tokens of C - Keywords, Data-Types
- Variables, Constants, Operators, Identifiers
- Storage Class Specifiers, Control Flow Statements
- Arrays, Multidimensional arrays, Data Input & Output
- Strings, Loops, Functions and Recursion
- Pointers - Introduction, Pointer Arithmetic
- Pointers and Arrays, Pointers and Functions
- Pointers and Strings, Structures, Unions, Enum
- Typedef, Bit field operators and pointers with structures
- Preprocessors, C and Assembly, Files, I/O
- Variable number of arguments, Command Line arguments
- Error handling, Debugging and Optimization of C programs
- Bit operations, Handling portability issues in C
- Hardware, Time, Space and Power aware Programming

Course Modules

M3 - Embedded Linux Device Drivers

- The Embedded Linux Software Eco-System
- Linux Kernel Modules and Module Programming
- Char Device Drivers

Kernel Internals:

- Dynamic memory allocations
- Handling Delays, Timers
- Synchronization, Locking
- I/O Memory and Ports
- Interrupts, Deferred Executions
- Driver Debugging Techniques

M4 - Embedded Operating System

- Introduction to Embedded Operating Systems
- Anatomy of an Embedded Linux System - Bootloader
- Kernel, Root File System, Process Management
- Interprocess Communication & Synchronization
- Memory Management
- I/O sub- system & Embedded File Systems
- POSIX Thread Programming
- POSIX Semaphores, Mutexes, Conditional Variables
- Barriers, Message Queues, Shared Memory
- Debugging and Testing of Multithreaded Applications
- Socket Programming, Customizing Embedded Linux based on Yocto

Advanced Embedded Programming

M5 - Microcontroller Programming and Interfacing

- Overview of Microcontrollers
- Microprocessors and SoC, RISC vs CISC
- Harvard vs Princeton Architectures
- Overview of Computer Architecture
- Embedded Memories, Timers/Counters
- UART, SPI, PWM, WDT, Input Capture
- Output Compare Modes, I2C, CAN, LED
- Switches, ADC, DAC, LCD, RTC
- Bus Standards (USB, PCI)
- Programming in Assembly and Embedded C
- Overview of ARM Architecture and Organization
- Introduction to Cortex-M Architecture
- Programming Model and Instruction Set Architecture
- Alignment and Endianness, Register access, State
- Privilege, Stack, System Control Block, Power Modes
- Memory Model, NVIC, Exception Handling, Bit- Banding
- Peripheral Programming, SVCall, SysTick, PendSv
- MPU, DMA, Mixing Assembly and C programs
- Introduction to CMSIS & CMSIS Components
- Overview of Cortex A & R architectures
- Introduction to Multi-Core Embedded Systems
- Introduction to FPGA

Advanced Embedded Programming

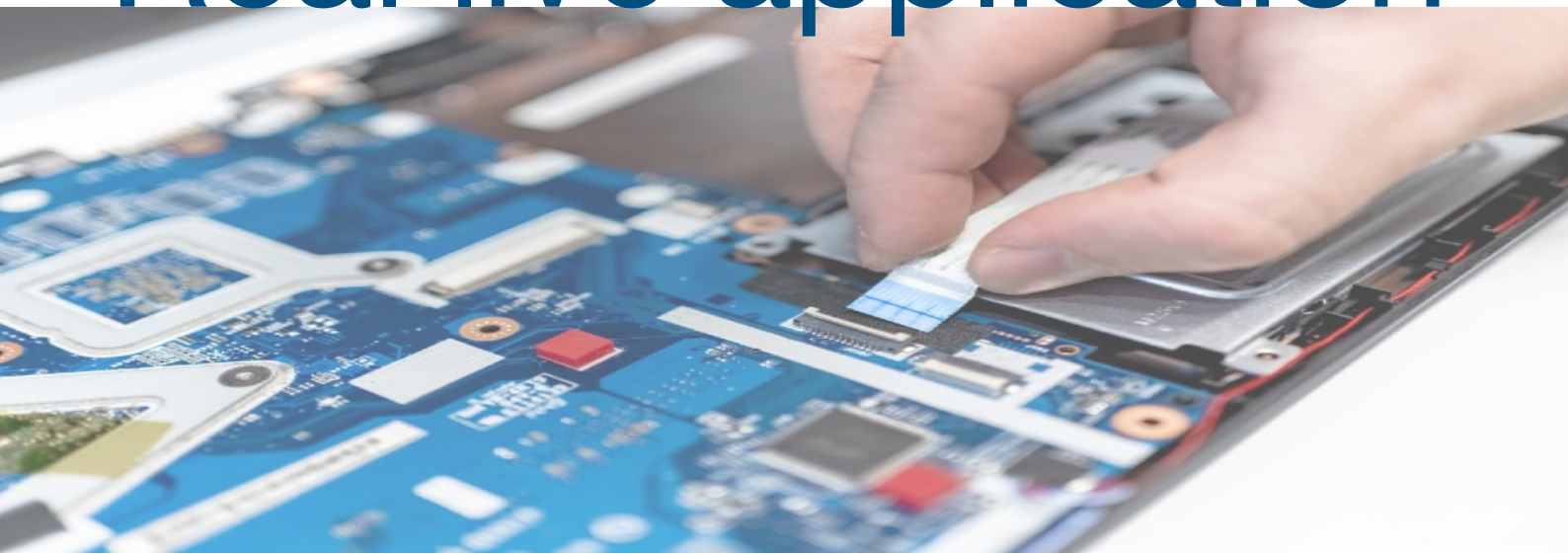
M6 - Real Time Operating Systems

- Introduction to Real-Time Concepts,
- RTOS Internals & Real Time Scheduling,
- Performance Metrics of RTOS,
- Task Specifications,
- Schedulability Analysis,
- Application Programming on RTOS,
- Porting of RTOS, Configuring RTOS,
- Building RTOS Image for Target platforms

At the end of each module the students are given module related project. This exercise will help the students to apply the learned theories and concepts to the real world scenarios.

At the end of the course the students are involved in ongoing projects in the company.

Real live application



Training is provided by the industry experts with over 20 years of experience in various industries around the world. Unlike other training institutes which provide training as a learning procedure, the training in Aibot Ink will be integral part of the company's ongoing projects and the student will get the opportunity to learn, implement, test and deploy the application of the actual ongoing projects.

Training Schedule

Fast track (1 month)

This course is designed for the working professionals who are short of the time and deadlines and to prepare them for involvement and implementation of Embedded Systems projects. It is designed for the professionals who have experience in basic concepts or at least have the knowledge and understanding of the associate concepts and tools.

Regular (3 months)

This course is designed for the fresh graduates who do not have any working experience or have done any projects. It covers the basic concepts including the operating systems, architecture, tools, Programming, installation and testing..

Both Fast track and Regular schedules have 6 days / week which includes theory and application.

Objectives

By the end of the training program you will be able to understand and master the concepts, tools, development, implementation and testing of the Embedded C Programming.

You will be able to immediately take up any assignments or jobs on Embedded Systems with complete confidence.

Certification

Aibot Ink certification as Embedded Programmer adds value to your profile and acts as a catalyst to boost your career prospects.

The recognition of Aibot Ink as a future innovative company will definitely enhance your future endeavours. This training and certification is by the industry itself and not by a training institute.


AIBOT INK™
Innovating The Future

CERTIFIED

Aibot Ink Certified

Embedded Programming™

This is to certify that

Mr. SUDARSHAN M

has successfully completed the training program in

Embedded C Programming

Duration: 1 month

Date: 01-01-2024 to 31-01-2024

Program head

Certificate ID: AIDA24001

Aibot Ink Pvt. Ltd. #22, 2nd Floor, Tanya Towers, 2nd Cross, Pampa Extention Kempapura, Bangalore 24, Karnataka, India.

Certification procedure

The certification requires to successfully pass the exam which includes the real live project implementation.

This is to ensure that the learner is fully proficient with the concepts and tools but also masters the skills to apply them on real projects.

Placement assistance

Successful certified candidates may be absorbed into Aibot Ink or placed at their associate companies.

Contact details

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