Name of the student

|  |  |  |
| --- | --- | --- |
| **career objective** |  | A brief about what an individual want to do in his/her career. An example can be: *Looking for a challenging and responsible opportunity, explore strengths and potentials and to gain experience from a professional organization to meet employer expectations and to continually develop my technical skills in the field of embedded systems with a view to join a team of professionals and to work with a progressive company for a long and rewarding career.* |
| **WORK EXPERIENCE** |  | * Currently undergoing hands-on technical training program – **Embedded IoT Course** at Emertxe Information Technologies (<http://www.emertxe.com>).
* This course is Government of India certified program, aligned with **Skill India** / NSDC under Electronics Sector Skill Council of India (<http://www.essc-india.org>) - **Embedded FullStack IoT Analyst QP ELE Q/1404**
* *<Mention previous internship/work experience, if any>*
 |
| **technical skills**  |  | * Programming Languages:
	+ Advanced C programming
	+ OOP using C++ and Python
* IoT Device programming - Arduino:
	+ Hands-on working with GPIOs, Analog I/Os, Memory usage, interfacing, character LCD
	+ Peripherals usage - Timers, Counters and Interrupts
	+ Communication protocols – Bluetooth, WiFi, UART, SPI, I2C, CAN
* IoT Gateway programming – Raspberry Pi:
	+ Linux CLI and Kernel subsystems
	+ Setting up Raspbian as an IoT gateway
	+ Sensor and actuator interfacing using GPIO
	+ Multi-tasking application development with Python
* IoT Cloud infrastructure:
	+ IoT cloud building blocks using AWS
	+ Usage of features like Lamda, REST APIs, Dynamo DB
	+ Using AWS specific dashboards
	+ Data monitoring, visualization and IoT Analytics
* IoT Communication Models & Protocols:
	+ Models: Request-Response, Pub-Sub, Push-Pull, Exclusive Pair
	+ Application Protocols: HTTP, CoAP, MQTT, AMQP
	+ Communication APIs: RESTful interfaces and WebSockets
	+ Network Layer: IPv4, IPv6, 6LoWPAN
* IoT Domain Exposure:
	+ IoT Architecture
	+ Setting up IoT workflows
	+ IoT Cloud Infrastructure
	+ Performance / Security / OTA in IoT
* Embedded platforms:
	+ OS: Ubuntu and Raspbian OS
	+ Boards: ESP32 NodeMCU, Raspberry Pi 3
* Development environment and tools:
	+ Dev environment: Vim, Arduino IDE, BASH Shell
	+ Compilers: g++, Python interpreter
	+ Tools: Node-RED, MQTTfx, Postman,
	+ IoT platforms - AWS

*<Mention additional skills, if any>* |
| **Course work** |  | * Microprocessor
* Digital Electronic
* Digital signal processing
* *<Mention course-work that are related to Embedded systems>*
 |
| **PERSONAL ATTRIBUTES** |   | Some key personal attributes that an individual stands for. Must be really honest. An example can be: * *Quick learning of new initiatives*
* *Ability to meet deadlines through effective time management*
* *Ability to work effectively under pressure*
* *Maintaining healthy interpersonal relationships with team*
* *Team player with work ethics, committed to work hard and sincere*
 |
| **Education** |  | *<Start with highest degree to lowest, in the following format>*M.Tech (Embedded Systems Design), VTU, 81%, 2015-2017B.E (ECE), Anna University, 72%, 2011-2015Class – XII, CBSE, 85%, 2011Class – X, CBSE, 80%, 2009 |
| **contributions and acheivements** |  | *<Call out paper presentations, awards won etc...>** Chairman of IEEE association in the college for a period of 1 year (2013 – 2014).
* Received Student Enterprise Award, an International Award given to best projects with a cash prize of $1500.
* Received the Best Outgoing Student award of the Institution for the 2010 – 2014 batch.
* 1st place in paper presentation contest at TJS engineering college, Gojan School of business and technology and MGR University.
* Received Star Award for Outstanding Contribution to Special Projects at Hewitt Associates.
 |
| **personal interests** |  | *<Call out your hobbies, ensure they are specific, not generic ones>* |
| **certifications and in-plant trainings** |  | *<Call out trainings & other courses attended…>** Underwent In-Plant Training at Indian Telephone Industries, Bangalore.
* In-Plant Training at BSNL, Chennai.
* In-Plant Training at HCL, Chennai.
* Honors Diploma in Computer Application certification at CSC
* British English Certificate – Preliminary Level
* Training in Embedded Systems & Linux Networking
 |

# **Projects at emertxe**

*<Create individual entries for each projects, include academic projects as well, A sample is provided as follows>*

|  |  |
| --- | --- |
| Project Number:1 |  |
| Title | Image Steganography using LSB Encoding and Decoding |
| Project brief | The objective was to send a secret text file encoded inside an image of bmp file format. Encoded the length of the secret text and then encoded the data into the LSB of the image bytes. The decoding process involves decoding the length and then decoding the text bit by bit. The final output is the secret text after decoding. |
| Technologies used | Embedded C – File operations, Pointers, Bitwise operations, Functions, Makefiles, Command line arguments  |
| Key challenges & Learnings  | * Understanding of pixels and header of image file by doing literature study
* Transforming the embedded information to the destination without changing properties of original image
* Faced challenges while doing bitwise manipulation of data to embed as well to retrieve the data from the destination image which was solved by self-understanding
 |

|  |  |
| --- | --- |
| Project number:2 |  |
| Title | MP3 tag reader |
| Project brief | MP3 tag reader is a software which will read and display MP3 (ID3) tag information from MP3 files. The software will be desktop based and not web based. This solution will read the given MP3 file, extract various tag information and display them via command line. This project can be extended to implement a tag editor, where-in users can modify mp3 tag information. |
| Technologies used | Advanced C – Function pointers, String operations, File I/O handling |
| Key challenges & Learnings  | * The project required lot of bitwise manipulation where I faced difficulty while dealing with signed and unsigned operators. By revising the concepts and implementing as snippets solved the issue
* Multiple challenges were faced in displaying the output with print statements. By using appropriate format specifiers the issue got resolved
 |

|  |  |
| --- | --- |
| Project number:3 |  |
| Title | Lexical Analyzer |
| Project brief | Lexical Analyzer is a program which converts the stream of individual characters, normally arranged as lines into the stream of lexical tokens. Tokenization for instance of words and punctuation symbols that make up source code. The main purpose/goal of the project is to take in a C file and produce the sequence of tokens that can be used for the next stage in compilation. This should also take care of necessary error handling conditions that may occur during tokenization. |
| Technologies used | File I/O operations, File pointers, String operations |
| Key challenges & Learnings  | * String tokenization faced lot of issues. By using strtok() function and its functionality the issue was resolved
* Understanding various phases of the compiler was a challenge. By doing through the documentation and discussing with mentors the requirement was understood.
 |

|  |  |
| --- | --- |
| Project Number:4 |  |
| Title | Industrial Machine State Monitoring System (IMSMS) |
| Project brief | The objective of the project is design and build a retrofit to existing machines (which doesn't have internet access) and provide a way for data analysis. The project involves both the implementation of Station Nodes and Access Point which acts as Gateway |
| Technologies used | * Embedded C – Pointers, Bitwise operations, Functions
* Arduino IDE
* WiFi
 |
| Key challenges & Learnings  | * Implementation of state machine was a challenging activity which helped me to understand asynchronous conditions that can come in various machines
* Data representation from user perspective was a challenge. Changing raw data into user view required a lot of understanding of UI.
 |

|  |  |
| --- | --- |
| Project number:5 |  |
| Title | Street Light Management |
| Project brief | The objective of this project is to achieve efficient street light management. The lighting will be controlled based on the light intensity of the external light. Option provided for manual overriding and maintenance if required. |
| Technologies used | * Embedded C, Python, Arduino IDE
* WiFi, MQTT
* ESP32, RPi3
* AWS – IoT Core, Lambda, DynamoDB
 |

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| --- | --- |
| Project number:6 |  |
| Title | Fleet Management |
| Project brief | The goal of this project is to monitor the fleet of vehicles. The vehicle parameters like the speed, cabin temperature, occupancy are sent to the database, which can be accessed by the control center for further analysis  |
| Technologies used | * Embedded C, Python, Arduino IDE
* WiFi, MQTT
* ESP32
* AWS – IoT Core, Lambda, DynamoDB
 |
| Key challenges & Learnings  | * Establishing end-to-end connectivity from IoT device to AWS cloud
* Timeout and re-transmission condition
* Data analysis and deriving actions
 |

# **academic projects**

|  |  |
| --- | --- |
| Title | Car Security System using face detection and recognition |
| Project brief | The image of a person trying to access the car is captured and is processed using PCA (Principal Component Analysis) Algorithm. The recognition process is done by comparing the current face image to those of the known individuals in a facial database and notifies the owner |
| Technologies used | MATLAB, Arduino IDE |
| Key challenges & Learnings  | * Implementation of Viola and Jones algorithm for face detection. This involved self-study of algorithm, implementation and debugging issues
* During creation of database faced multiple challenges due to changes in background lighting conditions and implemented DCT algorithm in order to resolve the issue
* Interfacing with GPS module was a challenge, faced multiple faults during recognition process. This was resolved by understanding Arduino data-sheets & command line troubleshooting of GPS module
 |

# **Work experience / internship projects**

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| --- | --- |
| Title | APPLICATION TO MEASURE THE ABSOLUTE THRESHOLD OF HEARING BY BEKESKY'S ADAPTIVE TRACKING METHOD |
| Project brief | A logarithmic sine sweeps in the frequency range of human hearing is generated and with the aim of measuring the absolute threshold of a user’s hearing. Amplitude adjustment of the signal is made available to the users. |
| Technologies used | LabView  |
| Key challenges & Learning  | * Generation of a sine wave sweep from 20Hz to 20Khz
* A dedicated button to increase or decrease the amplitude (+/-8dB per sec)
* To make the sweep duration user adjustable & splitting the channels.
* Calibration to adapt the sound card volume to the earphones.
* Develop a graphical user interface for the user and the report generator based on the user choice
 |