Fr. Conceicao Rodrigues College of Engineering

TechnoEDGE

Department of Electronics & Computer Science

"Creating Engineers with a competitive edge."

ISSUE: 2
YEAR: 2020

contents

From HOD's Desk

"Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution."

— Albert Einstein

It gives me great pleasure to present the Second Edition of TechnoEDGE the Annual Newsletter of the Electronics Department of Fr CRCE. The Department which started in the year 1987 with Bachelor's in Electronics Engineering, has recently changed the program name to Bachelor's in Electronics and Computer Science (ECS) Fr. CRCE has been the leading college to initiate such a move to adapt to the changed requirements of the industry. The ECS program has been designed to allow students to identify and build their interests in the Electronics as well Computer Science fields

The world is facing never-before experienced uncertainty in the wake of the pandemic. Every country is pooling their best resources to find a cure for the deadly virus. It is in times like this that the world looks at their technical personnel to provide solutions. Technology faces its biggest test in saving mankind and each and everyone of us must contribute towards this cause.

It is heartening to see our students going all out by enrolling for online courses to upgrade their skills and make the most of the time available. We hope that some of you will develop solutions for the new normal world. The Department prides itself towards its mission of personality building by providing not just quality technical knowledge but also avenues by way of Project Competitions, Paper publications, Internships as well as wide range of extra-curricular activities. It is our belief that once a student is equipped with rational thinking and empathy, he/she will be ready to face every challenge in their lives.

This Newsletter brings you some contributory articles and shares some of the achievements of the Department in the Academic year 2019-2020.

Dr Sapna Prabhu
Professor and Head
Department of Electronics & Computer Science
Fr CRCE

From the Editor's Desk

"Start where you are,
With What you have,
Make something of it
Never be satisfied"

-Dr. George Washington carver

Welcome to the second issue of TechnoEDGE, Department of Electronics & Computer Science newsletter of FRCRCE. This issue has articles ranging from Data analytics tools to Verilog career opportunities, Robotics , aero modelling.

This issue also has alumni comments, advice to the students to decide the future career during this pandemic. The contribution and dedication of faculty members, students and Alumni students of the department of Electronics has helped the newsletter in stepwise manner for achieving new mile stone.

The newsletter provides a perfect platform to highlight the contributions and achievements of students ,faculties and department staff members. It highlights department activities and the technical articles contributed.

I want to extend my sincere thanks to college management and our respected Principal Dr. Srija Unnikrishnan for continuous encouragement. Dr. Sapna Prabhu continuously supports various department activities and this newsletter. I am thankful to her. I also thank all students, faculty and Alumni for their support and contribution to the newsletter .

Stay safe and, please contact us if you have any suggestions or feedback. We would like to hear from you.

Ms. Archana Lopes,
Assistant Professor,
Department of Electronics & Computer Science
FRCRCE

TECHNICAL ARTICLES

OPPORTUNITIES AND CAREER IN VERIFICATION

One of the common questions that every student has is what if I start working as a verification engineer. Will I be able to switch to a design engineering job? Will the job be interesting? Will I be only testing and debugging? What all are the challenges? These questions make them confused on a career in Verification.

But for sure that there are lot of opportunities and a strong career path for verification engineers. Verifying a design is always crucial as any functional defect in the manufactured chip is going to cost huge money in terms of a new tape out as well as there is the risk of losing a design win opportunity in market. In the life cycle of a design, there are always bugs to be found in lesser time in every project.

Traditionally Verification engineers were considered as those who run some directed tests on a design and check for functional correctness and nothing more

Design complexities has increased tremendously in last few years and continues to grow exponentially such that Verifying a design has become more complex than design. The scope of Verification engineers has increased from mere **Functional verification** to a broad spectrum of other areas like **Power, clocks, Security, Hardware/Software Co-verification, Formal verification, Performance Verification etc** which are increasingly crucial for any design to be successful.

These new areas provides more opportunities for Verification engineers in terms of career and enhancing skills. There is continuous innovations in each of these Verification domains as every company looks for better and efficient ways to improve efficiency and productivity in Verification.

This is the only way an increasingly complex design can be successfully taped out in a market driven schedule.

A good verification engineer need to have both hardware and software engineering skills. Along with strong foundation in Digital logic design , Computer architecture ,Communication technologies and other domain knowledge, he/she should be a good programmer too. Most of current Verification infrastructure uses advanced software engineering concepts like Object oriented programming, factory patterns, continuous integration mechanisms as well as Hardware description languages like System Verilog and VHDL

Designs are also trending to become more of S**ystem on Chip (SOC)** and hence there is a need of System level verification and **Hardware Software Co-Verification** to make sure that not just the hardware but the entire system works. Hence there is increasing of scope for FPGA/emulation based prototyping and the need of Software and hardware verification engineers to work closely. This is another area with its own challenges for Verification engineers.

PROF. SANGEETA PARSHIONIKAR

DATA ANALYTICS USING ALTERYX

Data science and analytics is one of the preferred skills in the Industry along with Robotics and Machine Learning. These skills have a very good future and lots of scope at least for next Decade. Every functional domain Finance, Health Care to mention a few needs data analysis for better analysis of the customer data and proactively catering to the client needs, which ultimately result in more business revenue. If your skill help the business generate revenue means you will be in demand in the industry. In the current Volatile environment, in absence and less presence of operations, front, middle and backend desk, analyst employees, Tools, platform and programs that were able to generate data in a automated way helped business to scale and provide uninterrupted service to businesses and clients has further strengthened the belief on business on these programming platform tools. Jobs that require these skills in data science and analytics are set to increase by 30 percent across every industry in 2020 itself, Industries are virtually hiring employees and college students specifically with these skills and allowing them to operate in the work from home format. Considering the current situation top industries are looking at allowing people to work from office from December post a August situation review. Data shows 40% of companies are finding it difficult to onboard and hire talent with these skills. The fact is there's an incredible opportunity to get skilled up, and stand out with analytics irrespective of your graduation discipline (degree).

A data analyst collects and stores data related to finance, sales, market, Securities, Trade, logistics, linguistics, and other domains and behavior patterns. They bring technical expertise to ensure the quality and accuracy of that data, then process, design and present it in ways to help people, businesses, and organizations make better decisions.

Ambition of any software engineer is to develop and code while ambition of business user is to have product available to user with a quick turnaround, faster time to market as they say. Building and Delivering any new Product or Project with medium to high complexity, and building it from scratch the average time to market is nine to twelve months.

Tools like Alteryx which provide Extract Transform and Load features out of the box and at the same time have a feature to build complex logic in Python and R drastically speeding up the delivery process, in around 4 to 6 months**.**

Key Features of Alteryx:-

Alteryx is the tool used for data transformation and analysis. It is a platform that can discover, prep, and analyze all data, plus deploy and share analytics at scale for deeper insights. The key features of Alteryx are :

- Repeatable workflow
- Code free + Code friendly
- Complex Logic processing in Python & R
- Deployable Analytics
- Flexible+Diverse
- Scale +Governance

Where can we find Alteryx ???

We can find Alteryx across departments.

- **Finance + Accounting-** Big Data Analytics, Predictive Analytics
- **Engineering-** Industrial Engineering, Transportation
- **Computer Science-** Data Science, Data Analysis and Visualization, Machine Learning, Programming,Cloud Computing, Data Mining
- **Data Analytics-** Econometrics, Statistics, Probability Theory and Applications, Process and Management, Management Analysis,Managerial Economics, Data Visualization, Big Social Data Analytics
- **Geography-** Spatial Analysis, Geographic Information Science
- **Business-** Business Administration, Marketing, Supply Chain, Policy Evaluations, Enterprise Services,Management Information Systems, Business Management, Business Analytics, Predictive + Prescriptive Analysis, Spatial, Social Media Analytics
- **Other-** Quantitative Ecology, Psychology, Enterprise Business Intelligence, Machine Learning,Regression Analysis, Agribusiness, Energy Demand, Energy and Environmental Economics, Social Media Analytics, Sports Analytics, Social Science.

Certifications Provided by Alteryx:-
Alteryx Desktop license is free for students.

Alteryx Designer Core:-
Cost:- free

Whether you are just beginning your journey in analytics or a seasoned professional, this exam is an opportunity to prove your skills with Designer. This exam is a pre-requisite for advanced level exams.

The Alteryx Designer Core product certification exam is intended to test your aptitude around the 'core' toolset in Alteryx. The 'core' toolset was determined by the selecting the most commonly used tools in Alteryx Designer in addition to understanding basic UI/operational elements. The Alteryx Designer Core is exam is the first level of certification.

2. **Alteryx Designer Advanced:-**
Cost:- free

The Alteryx Designer Advanced exam is for users who have already demonstrated their proficiency on
core Designer abilities. This exam may be attempted only after you have passed the Alteryx Designer Core exam

3. Alteryx Designer Expert:-
Cost:- Paid course . Fees can be checked on Alteryx community.

This exam is intended for users who have demonstrated proficiency in both the Alteryx
Designer Core and Alteryx Designer advanced exams. Successful completion of the Core and Advanced exams are required to qualify for registration of the Alteryx Designer Expert Exam.

There could be other tools in the market which you can look for but key is developing your skills in Transformation and Analytics along with Machine learning and robotics as they are the skill to stay for another decade. Alteryx is one of the tools widely used an accepted in industry. You can always follow them on Linked and look at the various information and videos presented to decide for yourself. Happy learning and most importantly stay safe.

PROF. ARCHANA LOPES

AEROMODELLING – ENGINEERING OR HOBBY?

Aeromodelling is widely popular as an expensive hobby for technically oriented people.But Aeromodelling also involves skills of engineering to first design the aero models and only a well-designed model can actually fly and perform aerobatics.

Aeromodelling was first an event for me when I took up AIRWING NCC. In the start right from building an aircraft to flying it and also repairing it enlightened the engineering approach of it. As the time passed by it got converted into a hobby finding new designs, working out on new materials almost every day. This hobby keeps you charged for every hour of the day because there might be only few who don't like to see the bird in the air.

What is Aeromodelling?

Aeromodelling is the activity involving design, development and flying of small air vehicles. It is a very exciting and interesting way to learn, apply and understand science and engineering principles. Aeromodelling generally involves small sized flying objects like Radio Controlled Aircraft (RC Aircraft), Gliders, Ornithopters, Boomerangs and Paper Planes,

Although Aeromodelling looks like a lot of Aerospace/Aeronautical engineering topic, it involves a lot of interdisciplinary concepts from various streams of engineering - primarily Aerospace/ Aeronautical,Mechanical, Electronics, Electrical and Computer Science.

Aeromodelling gives a good understanding of the roles each of these engineering skills play in real aircraft industry and provides enormous opportunities to develop innovative thinking and implementation. While designing an aero-model is highly based on engineering principles, flying part of Aeromodelling is also considered to be an expensive hobby/ sport.

Developing as an aeromodeller at 1 MAH AIR SQN NCC I got an opportunity to work with the major three type of aircrafts R/C , CONTROL LINE& STATIC MODELS.

Building up a glider is a baby step to aeromodelling and one of the most joyful aero models.

Developing as an aeromodeller at 1 MAH AIR SQN NCC I got an opportunity to work with the major three type of aircrafts R/C , CONTROL LINE& STATIC MODELS. Building up a glider is a baby step to aeromodelling and one of the most joyful aero models.

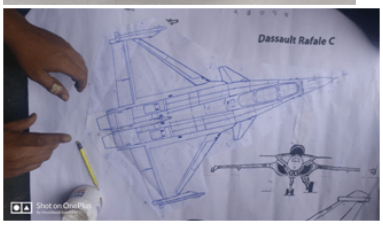
The materials used in aeromodelling:

- Balsa wood
- Bamboo
- Plastic
- Styrofoam
- Carbon fiber
- Fiberglass
- Mylar covering

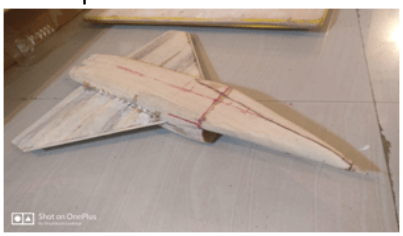
STATIC AEROMODELS

Static models are scale models built up from the scaled designs of aircrafts. These models are usually crafted in balsa wood and requires a lot of practice and experience.

DASSAULT RAFALE C PLAN



The body is hand crafted in parts and assembled using adhesive and other internally joint techniques.



Meanwhile repeating the doping process at least 4-5 times.

The model then requires a lot of sanding and coats of dope. This fills the cracks and the pores in the wood surface so that we can get an excellent surface for paint

Other parts of the model are to be prepared such as cockpit and other parts such as landing gears etc.

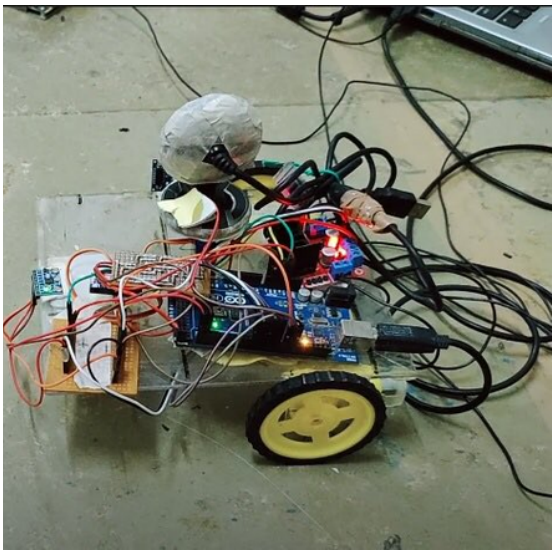
COMPLETED MODEL OF DASSAULT RAFALE C

HRISHIKESH KUWLEKAR

T.E. ELECTRONICS

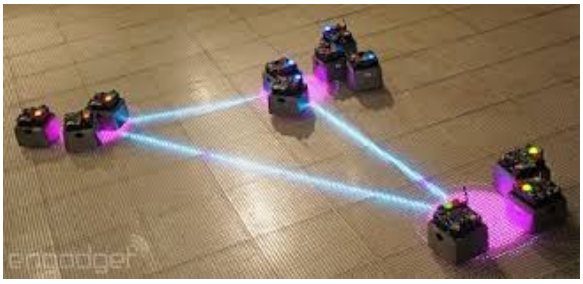
DISASTER MANAGEMENT USING SWARM ROBOTICS

According to the definition of Swarm robotics from Wikipedia it is an approach to the coordination of multiple robots as a system which consists of large numbers of mostly simple physical robots. It is supposed that a desired collective behavior emerges from the interactions between the robots and interactions of robots with the environment.



In simpler terms it can be said that a collection of simple physical bots will work in an interaction to solve a problem. This approach emerged on the field of artificial swarm intelligence, as well as the biological studies of insects, ants and other fields in nature, where swarm behavior occurs.

In order to solve a disaster various factors has to be considered such as alerting the officials, vacate the affected people from the area and trying to solve the disaster etc.



Considering a fire breakout in a building, where more than 10 people are stuck in the blaze. In such condition when only a single bot is deployed, the speed of the bot to take out will be usually more.

In this case the people inside the building may die, but if we deploy n-number of bots each coordinating with each other, this problem may be solved with ease and with less number of human lives getting fatal.There are many conditions in which this type of intelligence can be useful. The scope of this topic is far more than it can be discussed in this article.

According to my knowledge this domain hasn't been in much of interest in India but has a greater demand globally. Every day more and more ideas are contributed to this domain. But still there is more thrust . We might be able to see some fascinating things in the near future operated with swarm.

BHATI MOHAMMED AHMED
B.E. ELECTRONICS

VERIFICATION OF 32-BIT MEMORY USING LAYERED TESTBENCH WITH OPTIMUM FUNCTIONAL COVERAGE AND CONSTRAINED RANDOMIZATION

Over the past decade, the significance of Verification has paralleled that of Design in the VLSI Industry. A designer is required to convert the provided hardware specification & description to RTL code written in Verilog / System Verilog or VHDL, alongside this, verification of the design is necessitated. However, verifying the functional correctness of the Design Under Test (DUT) using conventional manual directed testing becomes quite cumbersome and inefficient. Simulation and testbench preparation time extends the time-to-market and the design complexity grows tremendously with the use of IP cores. Thereby, to overcome these shortcomings, a Coverage driven constrained randomised Layered Testbench is employed. This testbench has a plethora of advantages over the conventional directed testbench such as: checking for unanticipated bugs, better scalability, rapid progress, more upfront work and increased performance.

The Coverage driven constrained randomised Layered Testbench was developed in SystemVerilog to verify the 32-Bit Memory Model (DUT). The objective of the Layered Testbench is to determine if the verification objectives of the DUT have been met. The Layered Testbench accomplishes this by

i. Generating Stimulus
ii. Applying Stimulus to the DUT
iii. Capturing the response
iv. Checking for correctness
v. Measuring progress against the overall verification goals.

Components of a Layered Testbench: The Layered Testbench consists of four crucial layers: Scenario Layer, Functional Layer, Command Layer and Signal Layer.The Generator, in the Scenario Layer, is responsible for handling both the data and control command stimulus generation using randomised transactions.The Transaction block, in the Functional Layer, helps with the top level executions.The Driver, in the Command Layer, is responsible for receiving transaction packets from the generator and forwarding the packet level data inside the transaction packet into signal level layer for it to be passed to the DUT.

The monitor, in the Command Layer, is responsible for examining the signal level processing via a virtual interface and ensuring it is compatible with the functional level to be sent to the scoreboard. The Scoreboard, in the Functional Layer, is responsible for computing the expected DUT output and comparing the expected output with actual output from the monitor.The Environment contains the instances of all the verification components along with the required component connectivity.

The Test Block is implemented using the program block to prevent race condition between the DUT and the testbench, it is also responsible for environment instantiation and testbench configuration. The topmost block is responsible for connecting the DUT and Testbench. Assertions are checks which are embedded in a design to assert the correctness of the design, for the given DUT, the following assertions were implemented: i. Assertion to validate the reset functionality ii. Assertion for write operation iii. Assertion for read operation iv. Assertion to ensure that read and write operations do not occur simultaneously

The 32-Bit Memory DUT was hence verified with the Coverage driven constrained randomised Layered Testbench developed using SystemVerilog. The Code coverage, a metric to measure the quantity of design code exercised in the DUT was found to be 100%. The Functional coverage, a metric to measure the design specification exercised was determined to be 85%. To assist with the determination of the Functional Coverage, the cover group created encapsulated the cover points for address and data_in. For each cover point, five cover bins are created explicitly. Thereby, following the same methodology Coverage driven constrained randomised Layered Testbench can be developed for verification of any given DUT.

SHERYL SERRAO, YASH KUMAR
T.E. ELECTRONICS
PROF. SANGEETA PARSHIONIKAR,

ROS- THE FUTURE OF ROBOTICS

Robotics and Automation is a sector that fascinates every individual. The broad spectrum of applications covered by this sector makes it so popular in the present times. Finding its application in military, medicines, industry, household and many more this sector seems limited only by the creativity of humans. These applications require extreme precision and sophistication to deliver the best efficiency. Complex algorithms and data processing is what makes these things work. So these seem a nearly impossible task to any of us.
But a recent breakthrough in the Robotics and Automation sector has made it simple for people to learn and implement such robotics applications.

ROS -Robot Operating System started at Willow Garage in 2007 is a cluster of data such as, packages, services, tools and utilities that makes robotics application designs easier. Since then ROS has become popular among a lot of companies. With the help of the ever-increasing community and contributors to it, ROS has become a well-developed software. ROS has now been implemented in various Robotics application by various companies like Embark(Trucking),Simbe(Inventory Checking and Retail),6 River Systems,Farmwise(Farming0, Built Robotics(Industrial Equipment) etc.

ROS is a tool that can be used in robotic systems to add value to it rather than reinventing the wheel. We have come a long way in Robotics and it would be foolish to rebuild the existing infrastructures over and over again. ROS provides with already developed packages and libraries for all sorts of hardware devices to be used in your new projects. It also provides an advance tool for simulation analysis so that you can implement and simulate your robots before actually building them in real.

What makes ROS so different from the existing methods is its various features like Communication, Simulation and Analysis Tools, Multitasking and most importantly the community contributions. A few of the facilities of ROS are discussed below to give a little insight into how ROS handles these features.

ROS uses PUB/SUB busses for communication similar to RabbitMQ/ZeroMQ. The entire software is based on nodes which are pieces of code.

A robot can be divided into three major tasks Sensing , Actuation and Control. Hardware sensors take input from the environment and convert it into electrical quantities a node can be written for the same. The actuation is done by using wheels, wings, motors, etc. The Control system comprises of algorithms that process the data from the sensors and reflect it on the actuators.

The nodes communicate with each other by subscribing and publishing to topics. For example, we have a very simple application such as a distance indicator where a node calculates the distance using an ultrasonic sensor (distance sensor) and other nodes drives an array of LEDs. Now the LED driver would subscribe to the distance calculation node. The distance node then publishes the distance values in the form of messages to the Led driver. ROS facilitates each node to run individually hence it’s possible to run all the nodes at the same time.

ROS code is not limited to any language it supports python/C++/java. Every node can be independent of the language making it possible for each of the contributor of a particular project to write the code in his own comfortable language.

ROS Makes life of the developers easier by providing a number of useful tools and utilities as follows

ROS Launch System: Launch System makes use of launch files in which a number of modules or nodes are listed. These are XML files that can help to run multiple ROS Nodes at the same time without additional programming required

ROS bag: ROS bag allows to monitor data on the Message Buses at high speed. We can save play view share replay and test it against real data. We can record an erroneous movement in the robot and analyse the fault.

GAZEBO/ Ignition: These are simulation tools that help in testing the robots by simulating the robots in a way they would work in the real-life environment.

RVIZ: is a 3D visualization tool that helps in mapping the area around the robots

RQT suite which allows us to build apps by taking features from RVIZ TF2 Library is for Hard Math Help in ROS it allows us to know the position of the robot with respect to anything else MoveIt is another tool that helps to move robot parts from one point to another in order to implement motion ad recording results NavStack its helps to build a map of the world around the robot and update it and navigate it.

All these tools that ROS provides makes it really powerful for robotics development. Robots can be made without actually investing in parts and Material. The behavior can be simulated as well so as to avoid and accidents and losses. This helps in revolutionizing the field of robotics to a great extent and no doubt it is blooming in today's world. So this is the right time to get your hand s on ROS and start your Robotics exploration

uROS is the new development in the field of embedded systems that helps in the real-time robotic application

SHANTANU PARAB
T.E. ELECTRONICS

PYNQ-Z1

Over the years the use of the Field-Programmable Gate Array (FPGA) has greatly increased. From the labs of Ross Freeman in 1989 to the Bing search mechanism of Microsoft, the FPGA has evolved immensely. However, the hesitance towards this revolutionary technology has passed along with it since its making. One of the many reasons for a FPGA to be so effective and adoptable is its software accelerating ability. Complex tasks are often solved by software implementations with fast processors. FPGAs offer a cost-effective alternative, which, via parallelization and adaption to the application, provide a significant speed advantage compared to processor-based solutions. And, with this follows the FPGA stigma that causes a refrain amongst developers today.

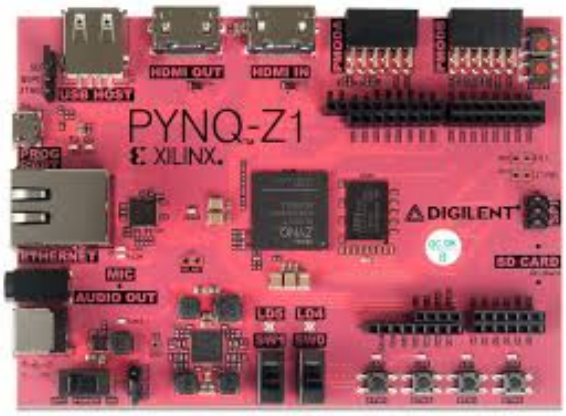
The FPGA is an integrated circuit ready to be configured by a customer/designer after its manufacture for a dedicated purpose. The stigma attached to this is that an FPGA is always configured with a hardware descriptive language. This causes a resistance towards developers trained in High-level languages like Python and C which is a sequential programming style to adopt a new language like Verilog or VHDL which is completely different with a parallel programming approach.

In HDL (Hardware Descriptive Language) code, we are describing digital hardware, and separate portions of this hardware can operate simultaneously, despite the fact that the corresponding lines of code are written using a top-to-bottom organization. While in Python or C or C++ we use a flow or object-oriented method. This is where the Pynq-Z1 comes to bridge the gap.

The digilent made Pynq-Z1is a hardware platform for the Pynq open-source framework. This software runs on the ARM A9, and supports Jupyter Notebook environment. And the main cause for its creation is to eradicate the use of HDLs completely and hence create a general use for all developers with a basic sense of Python programming. Powered with a 650Mhz dual-core Cortex-A9 processor and a DDR3 memory controller with 8 DMA channels and 4 high performance AXI3 slave ports.

It is a FPGA that works with 512MB DDR3 memory at a whooping speed of 1050 Mbps. All of this along with a 525MHz clock speed this FPGA is one of the best in the industry for sophisticated and high-end project making.

The Pynq Z1 was released in the fall of 2015 and within five years has seen acceptance and application in numerous projects already. From simple analytical applications like store inventory management, to image processing and home security in the IoT domain, the Pynq Z1 has been the best option till date. From Clustered-Drone control to Bot development the Pynq is also well versed in the electronic domain. Hence it is safe to say, that in the time to come, the Pynq Z1 will definitely be the next technological stepping stone towards a greater breakthrough.



KENNETH DSILVA
B.E. ELECTRONICS

DEPARTMENT EVENTS 2019-2020

Industrial Visit to 'Indian School of Design & Innovation,Mumbai'

Guest Lecture on 'Control System Application in an Eye Surgery System' in LCS by Mr. Ankit Khanore

Guest Lecture on 'Supply Chain Management' by Mr. Srinivas Jayaraman

Guest Lecture on 'Implementation of Java Optimized Processor on FPGA' in VLSI by Mr. Austine D'souza

Twenty Five Years of Teaching by Prof. Shilpa Patil

Farewell Function of Mr. William D'mello

STUDENT ACHIEVEMENTS

OUR ACADEMIC TOPPERS

B.E. ELECTRONICS

Austine D'souza
1st Rank

Rohan Chaudhari
2nd Rank

Tanvi Ranim
3rd Rank

T.E. ELECTRONICS

Aman Sheikh
1st Rank

Ashishkumar Pal
2nd Rank

Gautam Poddar
3rd Rank

S.E. ELECTRONICS

Sumanto Kar
1st Rank

Yash Kumar
2nd Rank

Urvashi Dhingra
3rd Rank

PLACEMENT STATISTICS

SOME OF OUR RECRUITERS

L&T Infotech

Overall Department Placement Percentage is 80%

HIGHER STUDIES

13 students have opted for higher studies.

NYU TANDON SCHOOL OF ENGINEERING

UNIVERSITY OF MARYLAND 18 56

University at Buffalo
The State University of New York

ROCHESTER INSTITUTE OF TECHNOLOGY
RIT
1829

ARIZONA STATE UNIVERSITY
GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912
1885

PURDUE UNIVERSITY
The Graduate School

Northeastern University
College of Engineering

RUTGERS
Rutgers Business School
Newark and New Brunswick

SYRACUSE UNIVERSITY
SUOS CULTORES SCIENTIA CORONAT
FOUNDED A·D· 1870
School of Information Studies
SYRACUSE UNIVERSITY

the GRADUATE SCHOOL at ILLINOIS STATE UNIVERSITY

UIC BUSINESS

TECHNICAL PAPER PRESENTATIONS

ICAC3-19

International Conference
on Advances in Computing, Communication
& Control (ICAC3-2019)

Organized by
Fr. Conceicao Rodrigues College of Engineering
Fr. Agnel Ashram, Bandstand, Bandra (W). Mumbai 400 050.

Certificate

This Certificate is awarded to
Deep Mistry
from
Fr. Conceicao Rodrigues College of Engineering, Mumbai, India
for presenting a paper titled
Automation of Attendance System Using Facial Recognition
authored by
Satya Sathvik Kadambari, Deep Mistry, Gauraang Prabhu, Monica Khanore
in International Conference on
Advances in Computing, Communication and Control
(ICAC3-2019).

Programme Chair (Dr. Sapna Prabhu) · Conference Chair (Dr. V.S. Joraput) · Principal (Dr. Srija Unnikrishnan)

IEEE

5th International Conference on
Computing in Engineering & Technology
Organized by
Department of Electronics and Telecommunication Engineering
Dr. B.A.T.U.Lonere
&
Department of Computer Science & Engineering,
MGM's College of Engineering, Nanded
on
January 9 - 11, 2020

CERTIFICATE

This is to certify that
Mr. Kumar Yash Ramesh
has contributed in a paper entitled
"Verification of 32-bit Memory using Layered Test bench with Optimum Functional Coverage and Constrained Randomization"
in International Conference held
during January 9-11, 2020.

Dr. Brijesh Iyer, Program Chair · Dr. A. M. Rajurkar, Program Chair · Dr. S. L. Nalbalwar, General Chair · Dr. Mrs. G. S. Lathkar, General Chair · Mr. Ramalkishor Kadam, Chairman (MGM CEN)

ICAC3-19

International Conference
on Advances in Computing, Communication
& Control (ICAC3-2019)

Organized by
Fr. Conceicao Rodrigues College of Engineering
Fr. Agnel Ashram, Bandstand, Bandra (W). Mumbai 400 050.

Certificate

This Certificate is awarded to
Froyston Mendonca
from
Fr. Conceicao Rodrigues College of Engineering, Mumbai, India
for presenting a paper titled
Intelligent Cardiovascular Disease Risk Estimation Prediction System
authored by
Froyston Mendonca, Riyazuddin Manihar, Ashishkumar Pal, Sapna Prabhu
in International Conference on
Advances in Computing, Communication and Control
(ICAC3-2019).

Programme Chair (Dr. Sapna Prabhu) · Conference Chair (Dr. V.S. Joraput) · Principal (Dr. Srija Unnikrishnan)

IEEE

Xaverian Educational Society
Fr. Agnel College of Arts & Commerce
Pilar - Goa
Re-accredited with Grade 'A' by NAAC (2nd Cycle)

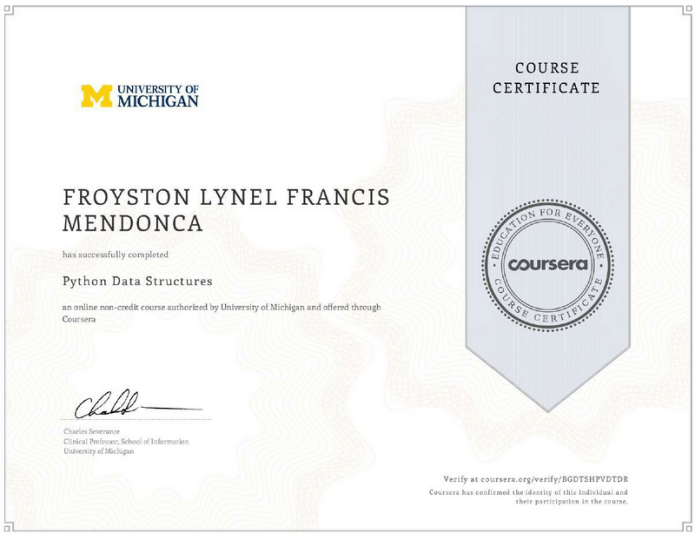
This is to certify that

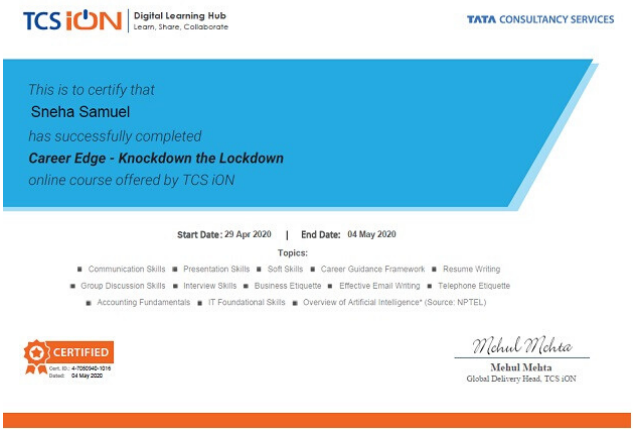
Dr./Mr./Ms. Yash P. Kane
from Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai
presented a paper titled Market Research Process for Startups

at the One Day National Seminar on the theme
'Startup Policy of India : Current Scenario in various sectors with special focus on IT sector'
organised by the Departments of Information Technology & Mathematics, in association with
Goa Technology Association (GTA)
on 24th August 2019, at Pilar Theological College, Pilar - Goa.

Assistant Prof. Dr. Shilpa Desai, Head, Department of Information Technology (Convenor) · Associate Prof. Loren Diniz, Head, Department of Mathematics (Co-convenor) · Dr. Savio P. Falleiro, Principal

COURSE SPECIALISATIONS





TCS iON | Digital Learning Hub
Learn, Share, Collaborate

TATA CONSULTANCY SERVICES

This is to certify that
Sneha Samuel
has successfully completed
Career Edge - Knockdown the Lockdown
online course offered by TCS iON

Start Date: 29 Apr 2020 | End Date: 04 May 2020

Topics:
Communication Skills ■ Presentation Skills ■ Soft Skills ■ Career Guidance Framework ■ Resume Writing
Group Discussion Skills ■ Interview Skills ■ Business Etiquette ■ Effective Email Writing ■ Telephone Etiquette
Accounting Fundamentals ■ IT Foundational Skills ■ Overview of Artificial Intelligence* (Source: NPTEL)

CERTIFIED

Mehul Mehta
Global Delivery Head, TCS iON

eSim
An open source EDA tool
Circuit Simulation Project

Certificate of Participation

This is to certify that
Sumanto Kar
from Fr. Conceicao Rodrigues College Of Engineering
has successfully completed the circuit simulation of
Highly Efficient Switching Mode Power Supply Using LM2596
under eSim Circuit Simulation Project

6MgXH

Prof. Kannan Moudgalya
PI, FOSSEE, IIT BOMBAY

IIT BOMBAY

fossee better education

MHRD
Govt. of India

Certificate issued by FOSSEE, IIT Bombay. To verify, scan the QR code or visit: https://esim.fossee.in/circuit-simulation-project/certificates/verify

MathWorks | Training Services

Course Completion Certificate

SUMANTO KAR

has successfully completed 100% of the self-paced training course

MATLAB Onramp

DIRECTOR, TRAINING SERVICES

11 May 2020

Google

COURSE CERTIFICATE

FROYSTON LYNEL FRANCIS MENDONCA

has successfully completed

Technical Support Fundamentals

an online non-credit course authorized by Google and offered through Coursera

coursera

Google

Verify at coursera.org/verify/[RLEHTLSJ]YVR
Coursera has confirmed the identity of this individual and their participation in the course.

iON | Digital Hub
Learn, Share, Collaborate

CERTIFIED
Cert. ID.: 71313-7050940-1016
Dated: 10 May 2020

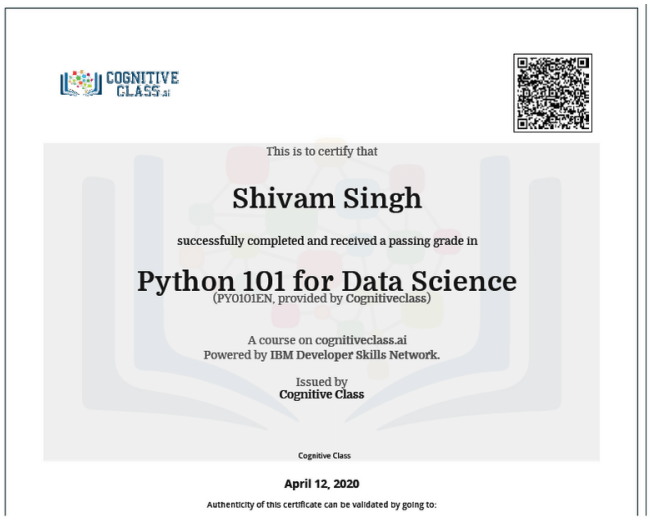
This is to certify that
Sneha Samuel
has successfully completed
Risk Management in Financial Sector
online course offered by iON Digital Hub

Course End Date: 10 May 2020

Topics:
Introduction to Risk and types of risk ■ Financial Risk Management
Risk Management Frameworks

(Faculty)

TCS iON - Empire Plaza, Lal Bahadur Shastri Marg, Chandan Nagar, Vikroli West, Mumbai, Maharashtra 400083



COGNITIVE CLASS.ai

This is to certify that

Shivam Singh

successfully completed and received a passing grade in

Python 101 for Data Science
(PY0101EN, provided by Cognitiveclass)

A course on cognitiveclass.ai
Powered by IBM Developer Skills Network.

Issued by
Cognitive Class

Cognitive Class

April 12, 2020

Authenticity of this certificate can be validated by going to:

Google Digital Unlocked

Yash Kane

is hereby awarded this certificate of achievement for the successful completion of **The Fundamentals of Digital Marketing** certification exam on **31/07/2019**

President – Google EMEA

The Open University

CEO – IAB Europe

Certificate ID: YNC XRT 8Y9

Verify the authenticity of this certificate at: HTTPS://LEARNDIGITAL.WITHGOOGLE.COM/DIGITALUNLOCKED/validate-certificate-code

Certificate of Completion

*This is to certify that **Shivam Singh** successfully completed 6 total hours of **C# Intermediate: Classes, Interfaces and OOP** online course on May 14, 2020*

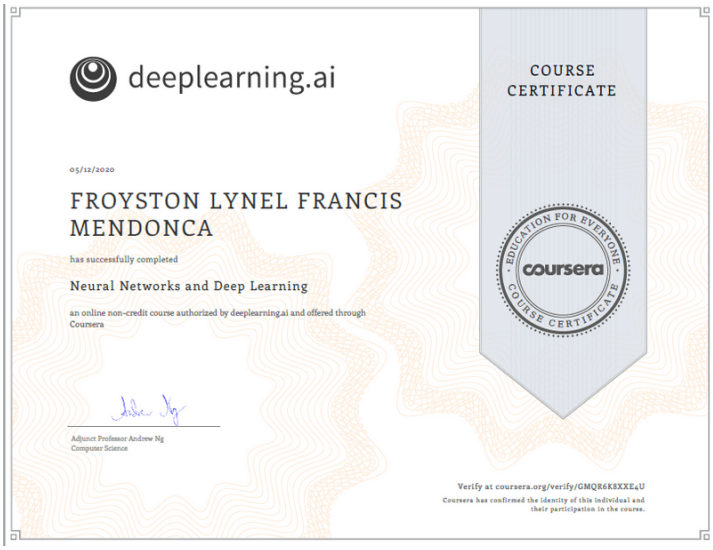
Mosh Hamedani, Instructor

&

Udemy

Certificate no: UC-c047e582-f014-45f1-81ed-6061d6691559
Certificate url: ude.my/UC-c047e582-f014-45f1-81ed-6061d6691559

#BeAble



deeplearning.ai

COURSE CERTIFICATE

05/12/2020

FROYSTON LYNEL FRANCIS MENDONCA

has successfully completed

Neural Networks and Deep Learning

an online non-credit course authorized by deeplearning.ai and offered through Coursera

Adjunct Professor Andrew Ng
Computer Science

EDUCATION FOR EVERYONE · coursera · COURSE CERTIFICATE

Verify at coursera.org/verify/GMQR6K8XXE4U
Coursera has confirmed the identity of this individual and their participation in the course.

BUDSTA Analytics & Insights

CERTIFICATE OF EXCELLENCE

is hereby granted to

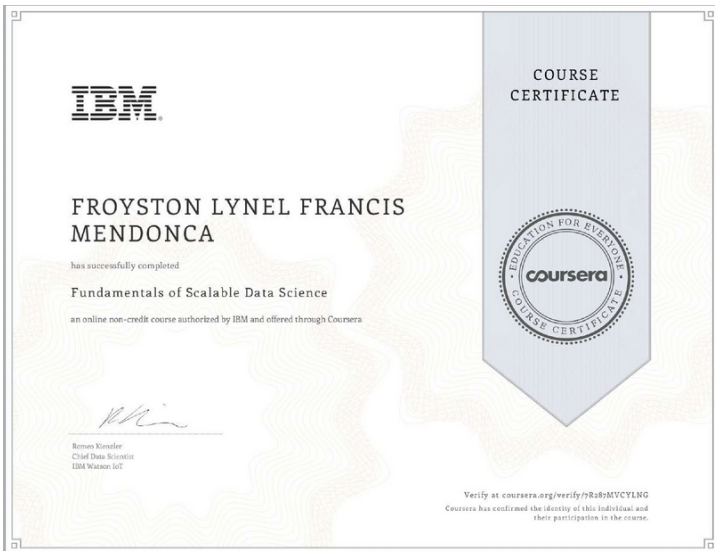
Deep Ketan Mistry

For Outstanding Performance And Lasting Contribution On

Auto Licence Number Plate Regulated Entry Project

Granted On April 3, 2019

Lester Fernandes – Founder CEO



IBM

COURSE CERTIFICATE

FROYSTON LYNEL FRANCIS MENDONCA

has successfully completed

Fundamentals of Scalable Data Science

an online non-credit course authorized by IBM and offered through Coursera

Romeo Kienzler
Chief Data Scientist
IBM Watson IoT

EDUCATION FOR EVERYONE · coursera · COURSE CERTIFICATE

Verify at coursera.org/verify/7R87MVCYLNG
Coursera has confirmed the identity of this individual and their participation in the course.

Certificate of Completion

*This is to certify that **Sneha Samuel** successfully completed 10 total hours of **Database Design and MySQL** online course on April 29, 2020*

Caleb Curry, Instructor

&

Udemy

Certificate no: UC-54b1628c-328f-4caa-b8a6-48c759697bb6
Certificate url: ude.my/UC-54b1628c-328f-4caa-b8a6-48c759697bb6

#BeAble

EXTRA CURRICULAR ACTIVITIES

Inter college Elocution Competition- Yash Kane

Alden Noronha invited as chief guest at Don Bosco International School

Alden Noronha secured 2nd place at Khelo India,University games

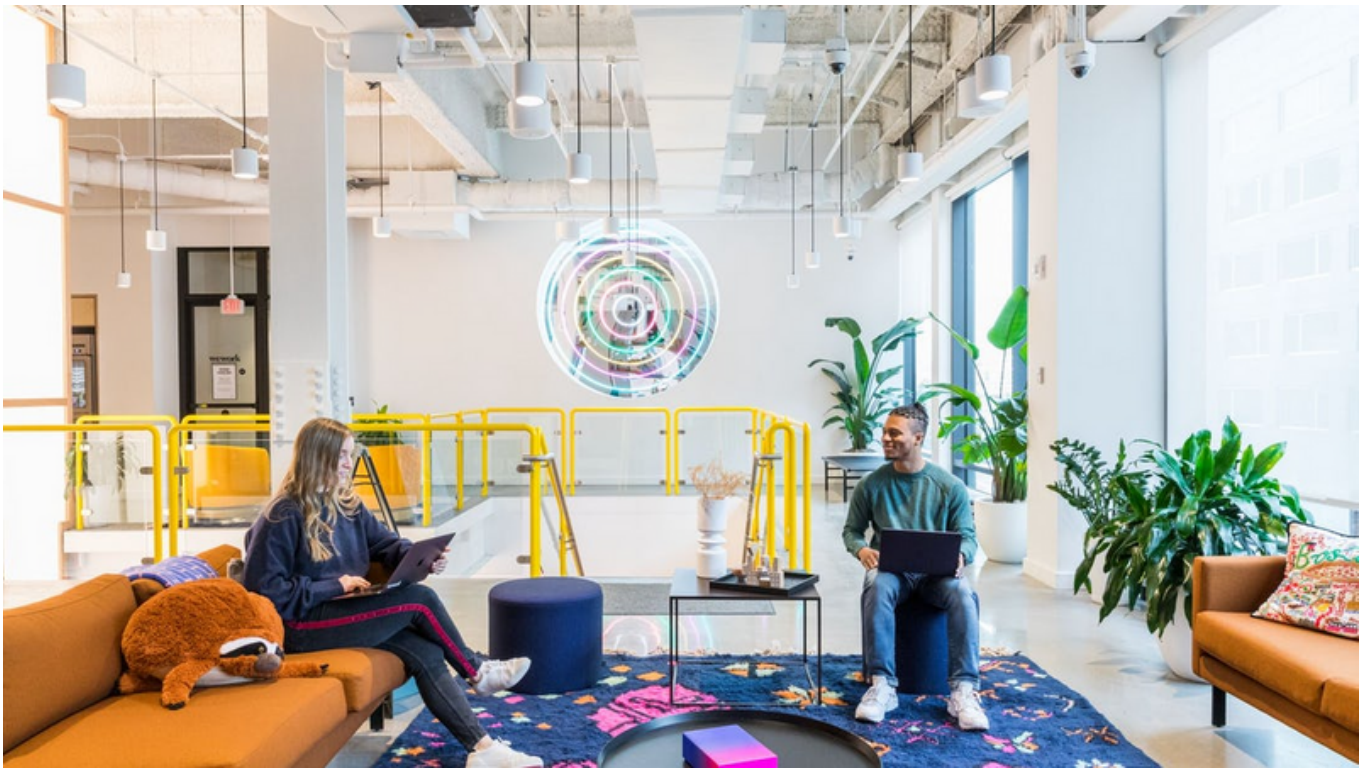
Sumanto Kar- Certificate of Excellence in Quiz on Padma Awards

Yash Tandon- Certificate of participation in Idea Competition.

Lockdown?

New Opportunities For My Career???

Lockdown has not impacted talent careers and people with right skills. It has just changed the ways of working. Indian cities and world has the technology infrastructure that has enabled remote offline and work from home opportunities. It also enables the We-work space where people from various organizations and start up gather together for a common work facility. And there are many such doors that have opened up. Why not take advice from seniors?? We have a strong alumni base that you can connect with to better understand a changed and different working world.This world might just give you less travel time and more better work life balance.



SHUBHANGI MATEY

Electronics- 2017 Batch
ASIC PHY Design Verification Engineer
Qualcomm Technologies, Inc.

Time to align Lockdown chaos!

Covid-19 is going to change our lifestyle in all aspects of our life, be it personal or professional. To focus on the good side, lockdown due to Covid-19 pandemic has given us ample time to think about what we want from life. It has opened up new online learning opportunities in terms of exploring new skills and also polishing existing skills. It's exciting to think that we can take full leverage of accessibility to the internet to improve and develop our personality!
Here are a few suggestions on how to utilize time during lockdown, look beyond crisis and plan for the future.

- First things first,what do you want to do after graduation? It's very very important to know your area of interest and aspirations! I can't emphasize enough, be it about the kind of job you want to do or the area in which you want to pursue post graduation.
    - **MTech//MBA/MS/other** - Research about available courses in interested Universities. Keep yourself updated with the latest technology trends (Read IEEE papers or technical Blogs). Prepare for entrance/respective qualifying exams.

    - **Job** - Be very specific in what kind of job you want to do. Say if you are an Electronics engineer and if you like VLSI. VLSI industry in itself has multiple career opportunities. One can choose to have a career in Front end VLSI or Back end VLSI based on understanding and skills. Both have equal job opportunities in India– a lot would depend on how you learn, execute and grow. List down companies which offer positions of your interest. Check their company's career portal and note down the skill set they mention in their job profile. This will give you a good idea on what they expect the candidate to know during interviews. You may start improving on those skills. This will not only attract recruiters to your profile but also help during technical interviews. It goes without saying that start working on your resume!

- **Technical projects/online certification courses?**
  - There are multiple websites that offer free/paid courses. Decide what course you want to take online based on your level of understanding. I have found these websites very useful in brushing up my skills while preparing for technical interviews - Udemy, Coursera, Udacity.

  - It doesn't make a difference if you have a certificate for an online course or not, as long as you have in depth knowledge of the topic and as long as you can understand it's application. It's always great if you plan to add such skills in your resume!

  - Working on technical projects is always recommended. There are a lot of websites that can be used to run and compile HDLs like edaplayground.com. You may also want to practice scripting/coding on websites like leetcode.com, hackerrank.com, codechef.com and many more.

- **Create/Update Linkedin Account** - Networking is very important. Especially now that we don't get to meet people in person, use Linkedin to its maximum capacity! Linkedin is the best place to connect with professionals of relevant industries and also to connect with seniors who have taken similar paths in their careers. It allows you to showcase your technical skills and helps recruiters to reach out to you directly.
If you are clueless about where to start, I would suggest following influencers/bloggers who are helping thousands of candidates seeking job opportunities. To start with,
follow Roshni Chellani on Linkedin. Her networking ideas and interview tips have really helped in approaching job hunt the right way during stressful times like these! A lot of professionals are ready to guide in the right directions, all you need to do is Ask!

- Use social media for career growth! Read blogs on how to crack technical/HR interviews, watch instructional videos, attend webinars/live sessions on Youtube, Facebook, Instagram etc. If you are looking for job opportunities, keep applying online for positions on interested company's career portal. You may also want to monitor new positions on career websites like linkedin.com, glassdoor.com, google jobs, indeed.com, naukri.com, shine.com etc.

Most importantly, find a hobby that allows you to release stress. Cook, blog, write, draw, paint, watch/read about a sport, meditate, workout, anything that gives you joy! It will always keep you positive and in the right mindset! Take care and don't stress out! Things will always work out, just be persistent and have patience!

JAINISH KOTHARI

Electronics- 2015 Batch
Associate, Securities Department
Goldman Sachs India, Bengaluru

How we should induct non software engineers into software domain?

Changing domains/roles is not easy. Software companies are now looking for 'problem-solvers' than an actual 'language expert' because it has become quite easy to learn programming languages in this world of technology and languages are becoming obsolete sooner with new advancements everyday. For non-software engineers to enter the software domain and succeed in it, they will need to make problem solving a part of their daily habits.

Companies prefer candidates who have a strong base with a practical experience. With the basic learning of C++ and Java in the first year of engineering, development of skills should be done in any one language of the person's choice by spending at least an hour daily out of the normal college/lecture schedule and problem solving skills should be improved by attempting more hackathons and programming competitions organized by various companies.

The regular study will build the base which will also help in learning any new language in future and hackathons will help expose real life challenges and how to implement the languages in solving them making the students more employable into the software domain.

Non software engineers can go into the depth of software designing approaches by understanding the design structures of the software or programming languages they use or are part of their curriculum (AutoCAD for production engineers, VHDL and System Verilog for Electronics engineers, etc). Udemy and other websites can help create a deeper base learning from a language skills perspective. College/University can try providing more such online platforms for the students to learn the skills. Lot of certifications are not recommended because companies value skills over certificates but one of the certifications in any base language like Java or Python will be an add on.

PARAG KHACHANE

Electronics- 2002 Batch
Head of Digital – Godrej Housing Finance

How we should induct non software engineers into software domain?

Dedicated training on technologies which he/she will be using in the organisation Working on the real projects (swimming in the deep water)

What if I have to work in a field I am not graduated in?What should I do?

If at some point you need to work in a field that you are not graduated in, don't hesitate. It will bring in new perspective in that domain. Improves adaptability and ability to step out of comfort zone .You can apply learning in unconventional way. This often bring inefficiencies

NIDHI MANDAVKAR

Electronics- 2016 Batch
Product Specialist, CITCO Shared Services Pvt. Ltd.

How we should induct non software engineers into software domain?

I am sure everyone has time to check social media. So please don't find an excuse of having no time to check the wide range of online courses offered by Udemy, Coursera, EDX etc. I can't stress enough on how you shall be benefited from these courses. These are offered by professionals from universities across the globe. You can even earn a certificate which you share on platforms like LinkedIn and enhance your overall work profile.

What if I have to work in a field I am not graduated in?What should I do?

I have been working as a business analyst in the banking domain IT sector for quite some years now and I would like to highlight few of benefits here :

1. Learning new languages: Though business analyst is more of a functional role , I have applied SQL, VBA programming for automation, Visio, Python, H2, Access db etc in various projects that i worked on. You learn many languages in job and in this manner you learn a new thing everyday. I want to emphasise on constant change that leads to the job being more interesting and you discover more strengths over the course of time

2. Workplace culture: I am lucky to have experienced amazing workplace culture so far. Good Fun teammates , creative activities, games, sports events, free beverages, free company travel, food cards, festival celebrations, annual grand parties are some of the perks i can list.

3. Flexibility : Some IT companies offer time flexibility as per your needs, some offer working from home. This really helps employees to boost their productive even more.

4. Onsite visits : Some IT companies might even send you for onsite visits. These maybe within India or even abroad. Either way, each experience is worth it.

5. Good wages: I know most of us would be waiting for this point and it is important no doubt. Ofcorse, IT is one such sector where you get paid good. But let me tell you one thing, its always your knowledge, your interpersonal skills, your hard work and your adaptability that will lead you to climb the ladder. And as you climb the ladder, there is no doubt, more money shall pour in.

6. Growth and opportunities: For most of the companies, employees are given the opportunity to switch to a different team/different business line within the organisation if he/she is interested in change of work/profile/technology etc. So theres always an option of mobility where in you can still stay in the same company but with a different role if you are well suited for it.

VISION

Creating Engineers with a competitive edge.

MISSION

- To impart state-of-the-art technical education in Electronics & Computer Science Engineering.
- To create a platform for research, development, and learning of latest technology by providing qualified faculty, good infrastructure, and industry interaction.
- To improve employability by creating competitive engineers, with an ethical and professional attitude.
- To encourage entrepreneurship skills in the students.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

Engineering Graduates will be able

- Graduates will have the ability to utilize their technical knowledge and professional skills for building successful careers while maintaining ethical standards.
- Graduates will have the ability to pursue higher studies and research activities in Electronics and Computer Science.
- Graduates will have the ability to become entrepreneurs, professionals in multi-disciplinary roles and take up leadership positions in global organizations.

CONTACT INFO

Fr. Conceicao Rodrigues College of Engineering
Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai 400050. MH, IN

+91 22 67114000

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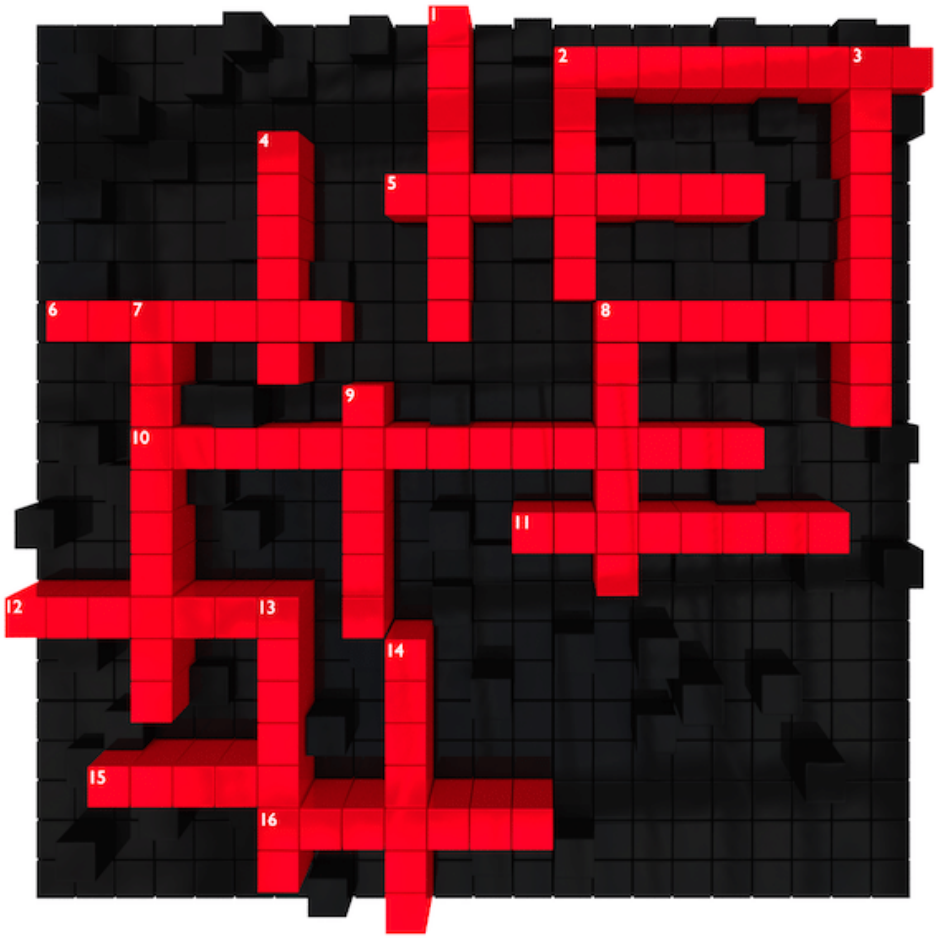
crce@frcrce.ac.in



Across

2. A diagram that shows the electrical connections of the electronic components
5. Current is considered to be the movement of _____.
6. A voltage source that converts chemical energy to electrical energy
8. A flow of electric charge
10. A characteristic of a secondary cell
11. A material that is composed of a mixture of elements
12. The term used to designate electrical pressure
15. A short circuit will have a _____ current flow.
16. The part of an atom that has no electric charge

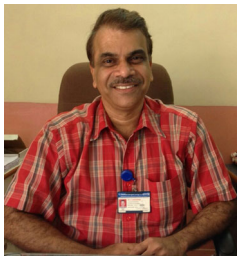
Down

1. A voltmeter is used in _____ with the circuit.
2. A device that opens or completes an electrical path
3. A material that opposes the movement of free electrons
4. One coulomb passing a point in one second
7. A resistive component that is designed to be temperature sensitive
8. A unit of charge that contains 6.25 × 10^18 electrons
9. An atom's atomic number is determined by its number of _____.
13. A substance that is found only in its pure form
14. It is used to measure current.

Our Faculty - Our Strength

Dr. Sapna Prabhu,
HOD,ECS

Dr. D.V.Bhoir,
Dean Students Affairs



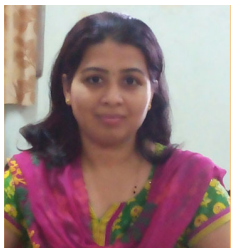
Mr. Narayanan Kallingal

Mr. B.R. Prabhu

Ms. Monica Khanore

Ms. Shilpa Patil

Ms. Swapnali Makdey



Ms. Jagruti Nagaonkar

Ms. Sushma Nagdeote

Ms. Binsy Joseph

Ms. Sangeeta
Parshionikar

Ms. Archana Lopes

Ms. Heenakaausar
Pendhari

Mr. Jayen Modi

Mr. Ganesh Bhirud

Ms. Pradnya Nandaskar

Ms. Shalaka Parab