

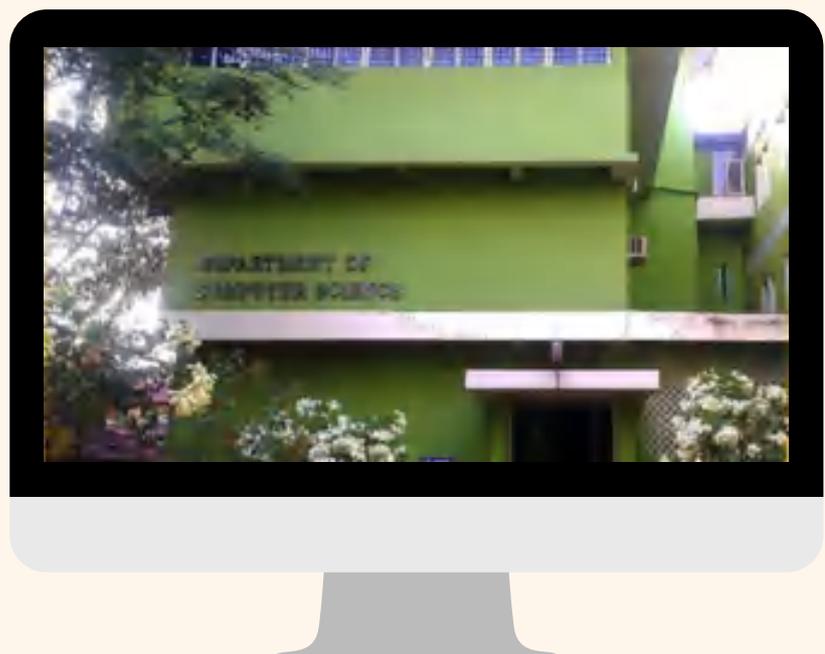


BITS 'N' BYTES

EDITOR'S NOTE

Welcome to Issue II of Bits 'n' Bytes for the academic year 2022-2023. In this issue we bring to you all the events held in department of Computer Science from October 2022- December 2022. We share with you the glimpses of the departmental activities undertaken, faculty participation, students articles, students achievement in various events and various activities conducted in the department of Computer Science. We hope this issue will help you keep connected with the department.

Amogh Santosh Pai Raiturkar
Assistant Professor, M.Sc IT
Department of Computer Science



Up Next: Department Activities ...

I N D E X

Editor's Note

Department
Activities

Faculty Corner

Students Articles

Students Corner

Department Activities



OCTOBER 2022

- On 14th October 2022 an Alumni Talk on “Careers in the Today’s Era” was organized by the Department of Computer Science in the Lower Auditorium. The Resource Person for Alumni Talk was Mr. Mahesh P. Matha. This Alumni Talk was by B.Sc Computer Science and BVOC Software Development Students.
- Department of Computer science conducted its first Board of Studies (BOS) Meeting on 15th October 2022 at 10:00 am in the Department of Computer Science Lab 1 in physical mode to discuss about the syllabus and other academic related details pertaining to Bsc , BVoc, MSc (IT) and P.G.D.C.A programme.

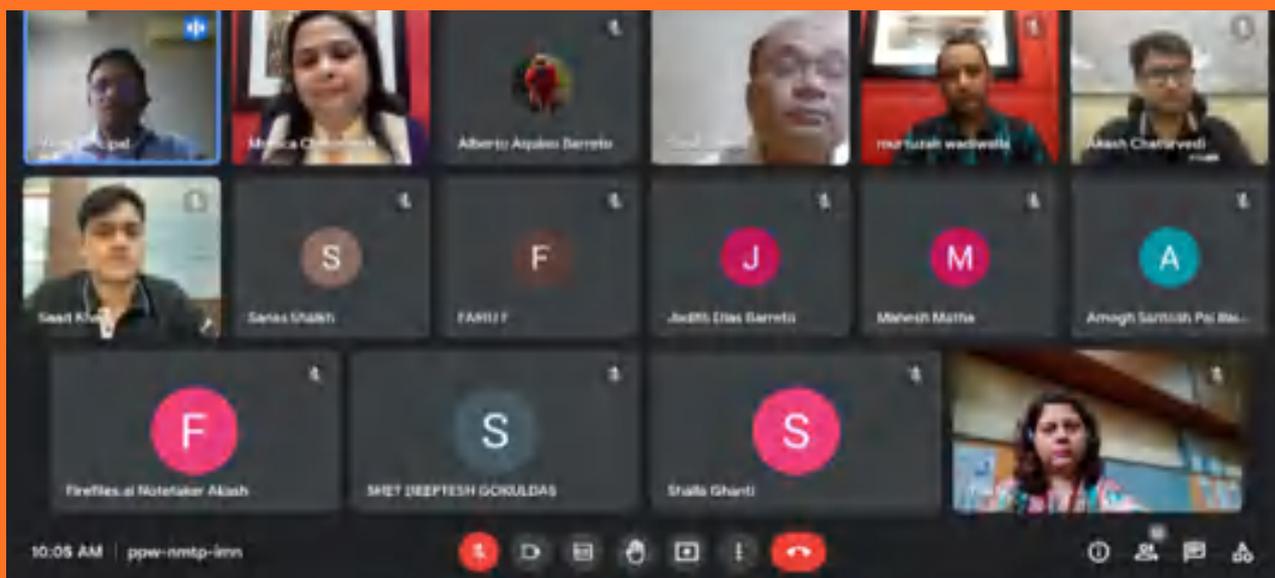


OCTOBER 2022 (Continued..)

- Department of computer science organised a talk on "Awareness on Overseas education" on 19th October 2022 at 2.30 PM at College Lower Auditorium. The resource person for the event was Mr. Vasant Hede, Marketing Manager, Eduadvise International Margao Goa.
- On 28th October 2022 Department of Computer Science had organized an Event "Geek Hunt" for Non-Computer Science. The Event was held in Computer Science Lab 1(F201) in the Department of Computer Science.
- On 30th October 2022 an Alumni Talk on "Careers in the Gaming Industry" was organized by the Department of Computer Science in F-302 Classroom. The Resource Person for Alumni Talk was Mr. Aditya Rane – Game Developer. This Alumni Talk was attended by B.Sc Computer Science and BVOC Software Development Students. The Resource Person addressed broad categories of careers namely; Programming, Testing, Design, Art, Marketing, Production Management, and a few more to the Students. The Resource Person also enlightened students on various tools, Colleges, programming languages, and other jobs in the same field.

NOVEMBER 2022

- The Department of Computer Science of Chowgule College has signed an MOU with Rebel Corp Academy, Mumbai. As part of the MOU nearly 13 Faculty Members from the Department of Computer Science attended a Two Day Online FDP on "Website Management Programme" on 22nd and 23rd November, 2022 from 10.00 am to 4.30pm.



DECEMBER 2022

- Department of Computer Science in association with Department of French had visited to Old Age Home at Asilo in Varca Benaulim on 9th December 2022. The faculties and students donated various items like towels, toiletries and other eatable items. They also contributed towards donation that helped buying groceries, vegetables, fruits and other basic necessities for Old Age home. Further Students and faculties sang Carols, dance and entertained all the inmates at the home.



Faculty Corner



OCTOBER 2022

- Amogh Santosh Pai Raiturkar attended Goa's **first Developer's Summit (GDS)** on 16th October 2022 held at Ravindra Bhavan, Margao Goa. The main event involved in meaningful discussions filled with expert opinion and valuable insight around our shared digital future where the developers and delegates engaged in conversations on significant tech issues.
- Amogh Santosh Pai Raiturkar attended online webinar on "**Hello World**", **Global Technology Summit Organized by 'Future Ready'** Venture under Umang Group, Margao Goa.

NOVEMBER 2022

- Dr. (Ms.) Shaila Ghanti , Associate Professor, Department of Computer Science attended the workshop on "**the POSH act for the Internal committees of higher Educational Institutions**" on 1/11/2022 from 9 am to 5 pm. in Parvatibai Chowgule College of Arts and Science organized by Goa Institute of public Administration and Rural Development and Directorate of Higher Education. Govt of Goa. The workshop was conducted by V.M. Salgaonkar's Law College, Mirar, Prof MRK Prasad, Dr. Sandhya Ram, Adv Emidio Pinho.

NOVEMBER 2022 (Continued..)

- Dr. (Ms.) Shaila Ghanti participated in the Workshop on “**THE WORLD BECOMES WHAT YOU TEACH**” in DON BOSCO COLLEGE OF ENGINEERING Fatorda Goa which was conducted by Ms. Suvarna Surlakar, Director at Funminds Learning Tech Pvt Ltd Goa, and “**DESIGNING SCALABLE IOT ARCHITECTURE**” which was conducted by Mr. Kapil Nair, CTO, Conexao Technology Solutions, Goa at INSPIRUS 2K22- 6th Edition which was held on 4th November 2022.
- Dr.(Ms). Sameena Falleiro, HOD & Associate Professor, participated in the Workshop on “**NEP 2020: Research, Innovation and Rankings (Online)**”, held on 14th November, 2022. organized by HRDC, Goa University.
- Mr. Gajanan Nial, Assistant Professor and In-charge MSc IT attended a workshop on **NEP 2020: Research, Innovation and Ranking** on 14th November, 2022. The workshop was sponsored by University Grants Commission (UGC) and organized by Human Resource Development Center (HRDC), Goa University.
- Mr. Gajanan Nial, Assistant Professor and In-charge MSc IT completed a **two-week FDP on Leadership Excellence organized by NIT Goa** from 14th to 25th November, 2022. The FDP was conducted by the Art of Living Foundation under AICTE Training and Learning (ATAL) Academy. The first week of the programme was conducted in online mode and the second week in offline mode at NIT Goa Campus.
- Mr. Amogh Santosh Pai Raiturkar attended an “**Online Two Day Faculty Development Program (FDP) on Website Management Program**” in association with Rebel Corp, Mumbai on 22nd and 23rd November 2022.
- Mr. Virendra Parodkar attended an “**Online Two Day Faculty Development Program (FDP) on Website Management Program**” in association with Rebel Corp, Mumbai on 22nd and 23rd November 2022.
- Dr.(Ms). Sameena Falleiro, HOD and Associate Professor, participated in an online National Webinar on “**Future of Teaching-Learning**”; held on 29th November, 2022 organized by GAD-TLC, SGTB Khalsa College, University of Delhi under the PMMMNMTT of Ministry of Education.

Students Articles

Tesla's Humanoid Robot a.k.a **OPTIMUS**

What's Changed



AI Day 2021
Concept



February 2022
Development Platform



Today
Latest Generation

TESLA LIVE

Optimus Timeline Progress

Source: Tesla (Youtube)

At last year's AI Day that is on 2021, Tesla CEO Elon Musk revealed a person in a robot suit. This year he released an actual humanoid robot. The Tesla AI Day event of 2022 gave us a first look at the Optimus robot. Musk said the company's goal is to produce useful humanoid robots as quickly as possible. Its humanoid design allows it to adapt to human society. It is 5 feet 8 inches (173 cm) and weighs 160 pounds (73 kg), has a load capacity of 5 pounds (20 kg) and can lift 150 pounds (68 kg) off the ground. The AI concept art of the bot that was introduced in 2021 was very human like which I hope they'll implement it in the final stage once the Optimus is ready. While the first-generation Optimus prototype (Bumble C) looked a little clunky, the second generation had a cleaner, more sleek design.

Over the years we have seen a ton of robots so what makes Optimus different? It has a brain. You heard it right people.... It's brain contains Tesla AI chip. Tesla is guiding Optimus with the same AI technology that powers FSD.

This contains the occupancy network, an AI system that creates a 3D map of everything surrounding a robot using camera input data. Tesla is constructing its own bespoke data center technology, Dojo, to train the numerous AI systems that go into a vehicle or robot.

Here are some additional characteristics of the Optimus that I should mention. It can move around, hold, and transport objects thanks to its built-in cameras, sensors, wireless communication and strength transfer points. The robot is powered by a battery that is integrated into its chest and is made to be energy-efficient. With a 2.3-kilowatt-hour battery, it is anticipated that one charge will be sufficient for a full day's worth of work. It has a navigation system akin to that in Tesla's autonomous cars as well as a core board for artificial intelligence. Tesla took much of its design inspiration from the human body, giving Optimus bot 28 degrees of freedom (Muscles has 28 structural actuators). This is comparatively less than what the human body offers, but Optimus still has a lot of degrees of freedom, and on his thumb, he has two degrees of freedom, allowing him to perform opposite

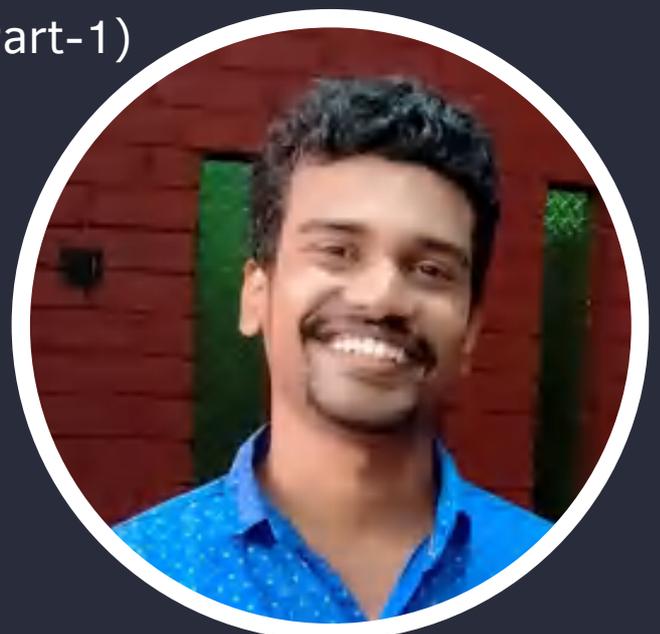
actions (Hand has 11 degree of freedom). The walking speed it offers is 5 MPH (8 km/hour).

During the AI Day 2022, Tesla showed what the Robot sees, and it looked very familiar. that is as a result of the neural networks are actuation directly from Autopilot. Training data had to be collected to show indoor settings and other non-vehicle products. Engineers have trained neural networks to identify high-frequency features and key points within the Robot's camera streams, for instance a charging station. Tesla has also been using the Autopilot simulator but has integrated it for use with the Robot programming. The torso additionally carries the centralized computer which according to Tesla will function the same as that of a human brain, consisting of processing imaginative and prescient data, making split-second choices primarily based totally on multi-sensory inputs and helping communications. Optimus also contains an audio support which makes me believe that it will be able to communicate with us humans. To ensure human safety there is even a stop functionality which is a localized control ROM that's not connected to the internet that can shut down Optimus.

The reason behind Optimus' humanoid shape is that factories, offices, and homes are all designed by and for people. That way a robot with a distinctive length and weight may problem turning through a doorway, mountaineering stairs, accomplishing a control, or running a device meant to be utilized by a human. For a general-purpose robot to have the greatest utility, it ought to have roughly a similar height, weight, and girth as a person. Optimus is still yet to achieve a few more like sliding objects, using a drill, pushing and pulling objects, climbing steps etc., and I hope that it will be able to overcome them soon and once that is done it would result in a profound transformation of various industries. Only the future will reveal whether these kinds of robots, task-specific robots, or Elon Musk's all-purpose humanoid robots will prevail or not.

By: - Mayur Naik

From M.Sc. I.T (Part-1)



5G TECHNOLOGY



Consumer demands are shaping the development of mobile broadband services. Anticipated increases in traffic growth in the number of devices and services, as well as demand for enhanced affordability and user experience. Thus, the question that now arises is, “Can we go beyond higher speed and networking capacity than the current one?” The answer is yes, we can!

Pretty sure you have read or heard about 5G by now ,It’s the fifth-generation technology standard for broadband cellular networks which has a theoretical peak speed of 20 Gbps, while the peak speed of 4G is only 1 Gbps. The networks transport a huge amount of data much faster, reliably connect an extremely large number of devices and process very high volumes of data with minimal delay which cellular phone companies began deploying worldwide in 2019 and is the planned successor to the 4G networks which provide connectivity to most current cell phones. 5G networks are predicted to have more than 1.7 billion subscribers and account for 25% of the worldwide mobile technology market by 2025. 5G technologies support applications such as smart homes and buildings, smart cities, 3D video, work and play in the cloud, remote medical services, virtual and augmented reality,

and massive machine-to-machine communications for industry automation. As Bill Gates emphasizes that “We’re changing the world with Technology”. 5G also promises lower latency, which can improve the performance of business applications as well as other digital experiences. While earlier generations of cellular technology such as 4G LTE focused on ensuring connectivity, 5G takes connectivity to the next level by delivering connected experiences from the cloud to clients. 5G networks are virtualized and they exploit cloud technologies.

Now that we have a rough idea about what exactly 5G is, let us look at how 5G technology actually works!

Wireless networks are composed of cell sites divided into sectors that send data through radio waves. Fourth-generation Long-Term Evolution LTE wireless technology provides the foundation for 5G. Now unlike 4G, which requires large, high-power cell towers to radiate signals over longer distances, 5G wireless signals are transmitted through large numbers of small cell stations located in places like light poles or building roofs.

5G architectures will be software-defined platforms, in which networking functionality is managed through

software rather than hardware. Advancements in virtualization, cloud-based technologies, and IT and business process automation enable 5G architecture to be agile and flexible and to provide anytime, anywhere user access. With the cherry on top, 5G networks can also create software-defined subnetwork constructs known as network slices. These slices enable network administrators to dictate network functionality based on users and devices. 5G also enhances digital experiences through machine-learning ML-enabled automation. Demand for response times within fractions of a second such as those for self-driving cars require 5G networks to enlist automation with ML and, eventually artificial intelligence. Automated provisioning and proactive management of traffic and services will reduce infrastructure cost and enhance the connected experience.

5G is set to be revolutionary. The good news is that 5G service is rolling out faster than any other previous generation and is already available in some areas in various countries. These early-generation 5G services are called 5G non-standalone 5G NSA. This technology is a 5G radio that builds on existing 4G LTE network infrastructure.

By: - Norman Mascarenhas

From M.Sc. I.T (Part-1)



Students Corner

Students Achievements



OCTOBER 2022

MSc IT Programme proudly announces internship-cum-placements of 18 out of 20 students in the month of October.

	Name of the IT Company		Students
1	3D Systems, Parvorim	1	Ayush Barkatali Noorani
		2	Rajeev Dessai
		3	Rohan Almeida
2	Creative Capsule, Verna	1	Keenan Costa
		2	Chirag Morajkar
3	Aurat Informedia, Panjim	1	Rene Dias
		2	Shane Sazona Fernandes
		3	Nitin Nivrutti Dahale
		4	Bale Shaunak Kautuk
		5	Ayush Barkatali Noorani
		6	Bhandari Shravan Kalidas
4	IMMO Information Tech, Panjim	1	Caldeira Jawsil
		2	Salahuddin Ahmad
		3	Ayush Barkatali Noorani
		4	Bhandari Shravan Kalidas
5	Numina Labs, Puna	1	Rohan Almeida
		2	Rajeev Dessai
		3	Hayston Costa
6	Codanto, Panjim	1	Omkar Naik
		2	Shaumik Kamat
		3	Michael D'souza
7	CtrlSave, Navelim	1	Samuel Godinho
8	Qubiseed Technology, Ponda	1	Saieshma Bhat





Merry Christmas & Happy New year 2023

WISHING YOU A SEASON FULL OF LIGHT AND JOY



EDITORIAL TEAM

FACULTY

Assistant Professor
Mr. Amogh Raiturkar

&

HOD & Associate Professor
Dr. (Ms.) Sameena Falleiro

STUDENTS

M.Sc. I.T (Part-1)
Mayur Naik

&

Norman Mascarenhas

Disclaimer The opinions/News appearing herein are those of the editorial board and cannot be attributed to the Principal or the Management. Send Your Feedback to : dcs@chowgules.ac.in

