BITS 'N' BYTES

**Department of Computer Science
Pavratibai Chowgule College of Arts & Science(Autonomous).**

In This Issue

Editorial's Note

December- The month of joy, happiness and to finish what you started.

Its always been a pleasure to work with our faculty and students who are always ethuisiatic to bring out their best. In the entire process of compiling this monthly newsletter we experienced a lot of intersting moments. It seems to be a difficult task but when you have a great team things turn out great. If you only work a little at a time, everyday a bit, suddenly the work will finish itself. So as we come to an end of this year we welcome you all to the 1st issue of Bits 'N' Bytes for the Acedemic year 2021-22 , extending our genuine thanks .
To the faculty and students for contributing towards this newsletter. Hope you all like it.
---- **Asst. Prof. Ms.Sanas Shaikh**

Introducing our Newly joined faculty

These year 3 new faculty and a 1 non teaching staff have joined our department.

Mr.Abhishek Gudekar, joined as Assistant Professor in the Computer Science Department. He has 9 years of Teaching Experience. His research interest area is database management.

--- Assistant Professor. Mr.Abhishek Gudekar

Mr. Amogh Santosh Pai Raiturkar, joined as an Assistant Professor in the Postgraduate (PG), MSc (IT) program. Having teaching experience of 1 year at P.C.C.E, Verna Goa, and 7 months of Industry Experience working as a web developer. His Qualifications are Master of Engineering in Information Technology, M.E(IT) and Bachelor of Engineering in Computer Engineering, B.E (COMP) at P.C.C.E, Verna Goa. He secured First Place in Masters of Engineering and Third place overall in Bachelors of Computer Engineering at Goa University level, published 3 research papers.

-- Assistant Professor. Mr. Amogh Santosh Pai Raiturkar

His Area of Expertise is Internet Security, Software Project Management, Software Testing, Data Structures, Web Technologies, Data Communications, and Database Management Systems.

When asked about his new role as a part of this institute these were his views " Parvatibai Chowgule College of Arts and Science (Autonomous) is one of the top and best reputed academic institutes in Goa. This college not only focuses on academic-related activities but also action plans to involve both faculty and students to undergo research practices.

I will focus on research paper representation and certification. and attend webinars/seminars to gain insights into the latest technology developments. As a faculty, I aim to disseminate knowledge, inspire learning and give exposure to students on current trends and development in the field of Information Technology to bridge the gap between industry and academics by organizing workshops, Webinars, etc
-- Assistant Professor. Mr. Amogh Santosh Pai Raiturkar

Mr. Swapneel Shashikant Naik, joined as an Assistant Professor in B.Voc(Software Development) programme. His qualifications are BE in Information technology and ME (CSE)from GEC, farmagudi. Having 2 years of industry experience and 6 years of teaching experience. And is also NET Qualified. His area of expertise are mobile adhoc networks and network security.
When asked about his new role as a part of this institute these were his views " Well, there are many reasons why I joined this institute. However one of the major reason for my desire to be a part of this institute is that the college has set a benchmark in the field of education. I feel with my experience, the type of groundbreaking work your organization has put forward, I would be able to confidently chip in with best of my knowledge for organization .I believe the skillset & experience I possess not only shall bring value to your organization,
but in turn shall also help me to acquire experience & sharpen my skills amidst your organization's professional work culture.

-- Assistant Professor. Mr. Swapneel Shashikant Naik

Non-Teaching Staff

Mr. Amar Baja Lambor has joined as a Lab Assistant
His Qualification areBachelors In Mechanical
Engineering, from Padre Conceicao College
ofEngineering Verna Goa
He has Worked in Godrej & Boyce Mfg Co.
Ltd Madkai Goa as an Assistant Manager inPurchase
Department.
When asked about his new role as a part of this
institute these were his views " I love learning and
being in a learning environment. My Future Goals
are To outgrow myself in every aspect of my field.

---- Lab Assistant. Mr.
Amar Baja Lambor

Students Corner

Pegasus: A horse in Spyware clothing

Privacy. A seven-letter buzzword that the tech
industry seemingly promises us, assuring that
they have the best systems in place to protect our
data from all the naughty hackers of the world.
Our data should be our data, right? An Israeli
company seems to think otherwise. Pegasus the
hacking software – or spyware – that is
developed, marketed and licensed to
governments around the world by NSO. (NSO
standing for Niv, Shalev and Omri, the names of
the company's founders) is an Israeli technology
firm.Before we delve into Pegasus itself

First let's understand spyware. Spyware is unwanted software that infiltrates your computing device, stealing your internet usage data and sensitive information. So how does Pegasus work? Pegasus is a suite of exploits that uses many vulnerabilities in the system. Infection vectors include clicking links, the Photos app, the Apple Music app, and iMessage.

Until early 2018, NSO Group clients primarily relied on SMS and WhatsApp messages to trick targets into opening a malicious link and using vulnerabilities in the system that would lead to infection of their mobile devices. In an October 2019 report, Amnesty International first documented the use of 'network injections' which enabled attackers to install the spyware "without requiring any interaction by the target".Pegasus can achieve such zero-click installations in various ways. One over-the-air (OTA) option is to send a push message covertly that makes the target device load the spyware, with the target unaware of the installation over which she anyway has no control.

An example of such an OTA attack would be Apple's default iMessage app and the Push Notification Service (APNs) protocol upon which it is based.

The spyware can impersonate an application downloaded to an iPhone and transmit itself as push notifications via Apple's servers. The same kinds of attacks have been documented on Android phones as well. Upon installation, Pegasus contacts the attacker's command and control (C&C) servers to receive and execute instructions and send back the target's private data, including passwords, contact lists, calendar events, text messages, and live voice calls (even those via end-to-end-encrypted messaging apps). The attacker can control the phone's camera and microphone, and use the GPS function to track a target. To avoid extensive bandwidth consumption that may alert a target, Pegasus sends only scheduled updates to a C&C server

The spyware is designed to evade forensic analysis, avoid detection by anti-virus software, and can be deactivated and removed by the attacker, when and if necessary.

Pegasus is no slouch when it comes to infecting any phones. So how does one take precautions? For one, performing complete cyber hygiene can safeguard against any of the pegasus link-based attacks But when Pegasus exploits a vulnerability in one's phone's operating system, there is nothing one can do to stop a network injection.

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Worse, one will not even be aware of it unless the device is scanned at a digital security lab. The best precaution is to keep one's phone updated. For example, while pegasus has been able to find exploits in iOS versions up until iOS 13.5.1, it still hasn't found its way onto iOS 14 or 15.Amnesty International released an open-source utility called MVT (Mobile Verification Toolkit) that's designed to detect traces of Pegasus. The software runs on a personal computer and analyzes data including backup files exported from an iPhone or Android phone. Cyberattacks are nothing new to the general public and Pegasus is a behemoth of a threat to our privacy. While it is scary to imagine a world where we're being surveillance unknowingly and while tech companies and firms promise us total privacy and protection.

Rohan Almeida
Msc-IT Part-1

Metaverse: a whole new world

How do you think the next version of the Internet will look like? In the wake of Meta's recent announcement that they will be moving beyond providing social media platforms to building the next generation of the Web, the hot topic now is the Metaverse.

The term metaverse was coined by Sci-Fi author Neal Stephenson in 1992 in his novel 'Snow Crash', where he imagined a computer-generated alternate universe with a shared social environment and shared world where people can gather, communicate, play games and do business. This description by Stephenson still holds true today, and the metaverse is viewed as an interconnected, shared universe where people interact through digital avatars, and a person's status is determined by the sophistication of their avatar.

There is a widespread belief that metaverse is closely tied to Web 3.0, the next phase of the internet's development. It is said that Web 3.0 will be based on blockchain technology, which will democratize access to the web and helpweaken the enormous control that large tech companies have over it.As far as the creation of a metaverse is concerned, it's not a new concept since there are many versions of the metaverse such as "Second Life" in 2003 and"Hubbo Hotel". Both remain active, even though their popularity has decreased. Recently, however, the metaverse has become the most popular term in the tech industry, both among enthusiasts and investors. Facebook has even changed its name to Meta Platforms Inc because they consider the metaverse to be the future of the internet.

weaken the enormous control that large tech companies have over it.

As a result, they are very much focusing on smart glasses, virtual reality headsets, and lifelike video calls via the internet. With Meta, you are able to move beyond two-dimensional social media platforms into an interactive digital metaverse, which recreates the feeling of real social presence and interaction as if you were physically present together. Interestingly, it all began with multiplayer games like Fortnite, Minecraft (owned by Microsoft), and Roblox (popular among children from seven to 12 years old). Through these companies, social +gaming has become popular, allowing children and adults to socialize while playing together. Through the socializing aspect, they created platforms that could serve as the building blocks for developing the metaverse. Most of these games, like Minecraft, that run on Hadean cloud software, scale up to thousands of simultaneous users. Virtual reality is suddenly becoming more of a focus because the computing power to scale resource-hungry virtual reality to a massive scale has only recently become a reality. Providers of large- scale distributed computing can easily accommodate 10,000 players on the same server simultaneously because of the increase in computing power. Many metaverse companies are even discussing the possibility of hosting simultaneous virtual concerts and sporting events for up to 50,000 people. But the metaverse is not only about games. The metaverse offers everythingfrom shopping to watching movies in a virtual theatre with people around the world, and even playing golf with virtual clubs. Fortnite, for instance, hashosted concerts by Ariana Grande and Travis Scott, whereas Roblox hosted LilNas X's concert that attracted 33 million views. Several other companies aredeveloping immersive music experiences in partnership with well-known artistsfor the metaverse. With cryptocurrencies and non-fungible tokens (NFTs) that maketradingeasyinside the metaverse, e-commerce in the metaverse is just as active. The great thing about NFTs is they enable people to transport their virtual identities and goods between different metaverse worlds, such as making a pixelated sword from a Roblox game into a powerful weapon in Fortnite.

. As a result, themetaverse will truly be "meta" and people will be able to move seamlessly between platforms. It is similar to the 1990s, when cell phone carriers began allowing people to text each other across different networks, resulting in an explosion of cell phone texting (SMS) worldwide. Several businesses, such as fashion designers who work in virtual collaboration rooms, will develop their businesses around providing goods and services to the metaverse. Gucci, for example, sells digital clothing and accessories in Roblox. VR solutions are also being used for healthcare, such as virtual consultations with a doctor or psychologist. Work-from-home has now become a permanent arrangement due to the pandemic, which is why Meta created the Horizon Workroom app to recreate the work environment. It is even possible to scan your computer, keyboard, and desk into virtual space using the Oculus Quest 2 VR headset to create a Holodeck level of interactivity blending reality and virtual reality. Collaboration with colleagues is possible with group audio, screen sharing, and a whiteboard in this virtual office. Meta also announced Meta Portal, a smart display and video-chatting device with a camera that follows you to create a life-like experience.

With the "Do Things Together" button in Messenger, you can read your child a bedtime story with augmented reality effects that let you and your child become characters.

Despite its increasing popularity, the metaverse poses some dangers. Some issues, such as intellectual property (IP), ownership, data protection, content licensing, and crypto assets, still need to be worked out properly. As time passes, it appears that we will spend increasingly more time in the digital sphere than in the physical one. While there is great enthusiasm for the metaverse, and massive amounts of money invested in it, and Microsoft and Facebook's efforts to dominate it, it won't be possible to seamlessly transition between apps for a few years. Once we can actually meet people around the globe and work together in the same room in a fully immersive way, the metaverse will truly explode and become an integral part of our everyday lives.

Samuel Godinho
MSc IT Part-I

Students Achievements

Placements.

Here is a glimpse of the students that were succesfully placed right after completing their programme for the acedemic year 2020-21.
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1.NIX BRANDON CORREIA -BSc. Computer Science got placed as Javascript Developer Intern at Conaug technologies and consulting.
2.MANJREKAR DIKSHITA G. -BSc. Computer Science got placed for Manual Testing at Open Destination

3.PRABHUGAONKAR SADANAND VINOD -BSc. Computer Science placed as Frontend Engineer at Ten Twenty Digital Agency

4.NAIK DIKSHA PRADIP -PGDCA joined as a Teacher at Smt Hirabai Talaulikar High School

Scholarship

Scholarship is a greatest source of financail aid as it makes education finacially accessible. And we are proud that two of our BSc. Computer Science students mentioned below got this oppurtunity.

(Tabitha Valerie Rosa)

1. Tabitha Valerie Rosa was awarded the £10,000 GREAT Scholarship, co-funded by the British Council and Staffordshire University to use towards pursuing her degree in MSc Computer Science (Computer Networks and Security) at Staffordshire University UK.

2. Brendon Ernest Rodrigues, was awarded a scholarship amount of £2500 to persue his Master's in Advanced Computer Science admission at TUOS (The University of Sheffield, England). TUOS is a Top 100 university, ranked 93rd in the world(QS rankings), a member of the prestigious Russell Group and ranked 14th in the UK(THE rankings).

(Brendon Ernest Rodrigues)

Faculty Corner

FACULTY AS A RESOURCE PERSON

1.   Dr.(Ms).Sameena Falleiro and Mr.Abhishek Gudekar was the resource person for a State Level Workshop on "Outcome Based Education-Mapping" on organised by the CTL of Chowgule College on 7th December, 2021 from 9.30am to 12.30pm.

2.Dr.(Ms).Sameena Falleiro was the resource person for a Faculty Workshop on "Bloom's Taxonomy" organised by the IQAC and CTL of Chowgule College on 17th, 2021 from 2.30pm-4.30pm

3. Mr.Abhishek Gudekar was the resource person for a Faculty Workshop on "Course Outcome Attainment " organised by the IQAC and CTL of Chowgule College on 17th, 2021 from 4.15pm-5.00pm

Faculty Participation:

- Dr.(Ms).Sameena Falleiro attended a Webinar entitled "Entrepreneurship & Leadership" by Ms.Kiran Mazumdar Shaw on November, 24th, 2021 organised by ICG, Goa.

- Mr. Abhishek Gudekar attended ACM Compute 2021 conference (Online Mode) organised by ACM India at University of Delhi, India from November 18th - 20th 2021.

Department Activities
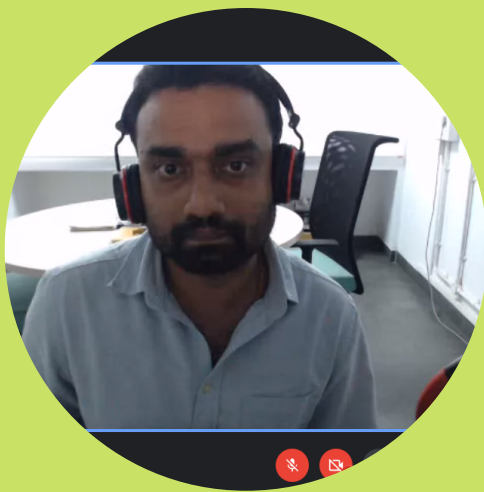
The Department of Computer Science organized an Online Webinar on –"AN OVERVIEW OF IMMERSIVE TECH (AR, VR & XR)" on 27th November 2021 for all BSC Computer Science and PGDCA StudentsWebinar was attended by 32 participants. Mr. Herold PC, PhD Research Scholar, IDP in Educational Technology, IIT Bombay was the resource person for this webinar..

The Webinar started off by the Head of the department Dr. Sameena Fernandes e Falleiro giving an introduction about the Webinar. Then followed by Mrs.Ashweta A. Fondekar who introduced the resource person Mr.Herold PC for the Webinar.

Mr. Herold PC explained and showed the demo videos of mind blowing technologies which is revolutionizing the present and the future that is none other than the immersive technologies comprising of virtual

reality augmented reality and extended reality among the fastest growing and fascinating technologies and showed a demo video giving an intro to all these three technologies VR, AR and XR.
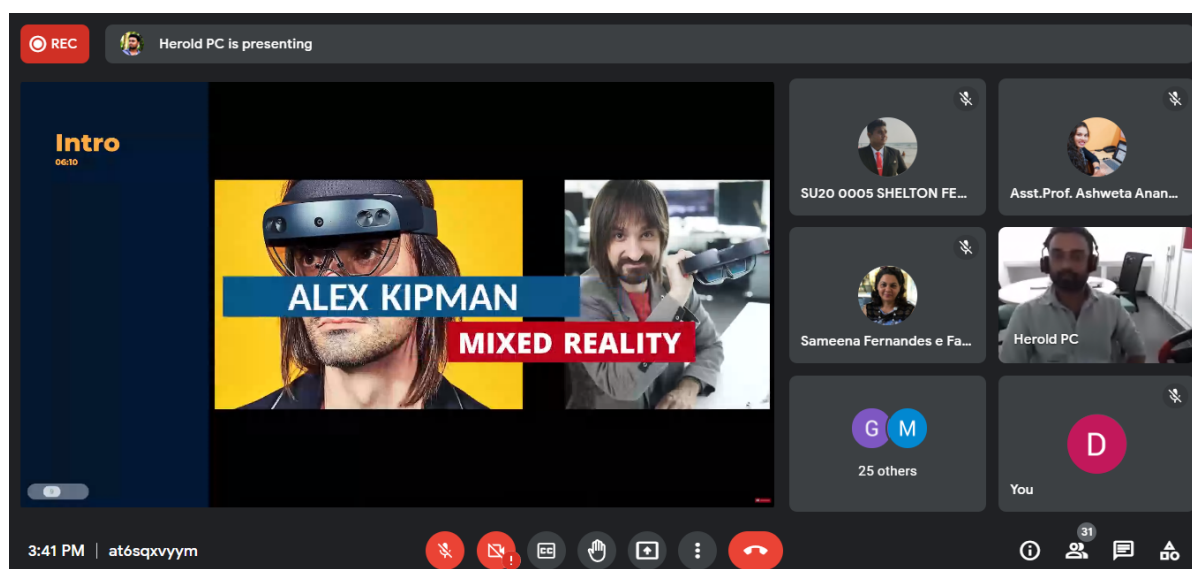
---- HOD and Associate Professor. Dr. (Ms). Sameena Fernandes e Falleiro

EDITORIAL TEAM

Asst. Prof. Sanas Shaikh

HOD and Associate Professor. Dr. (Ms). Sameena Fernandes e Falleiro