SCIT

Web and Media Committee Presents

ATHARVA

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EDITOR'S CORNER

Haritha N

The month of October has been quite challenging and hectic. The vigorous preparations for the semesters kept the students busy throughout the month. CSAM - 2018 was conducted by SCIT which had dignitaries from the industry talking about various trends in Information Security. Alumni meet was held in the campus, for which the alumni from various cities actively participated. With academics and extracurricular activities at one end, the SCIT family geared up for the Diwali holidays. The new dresses, sounds of crackers, beautiful sky lights, lamps and so on lights up the world, lights up the nation and lights up the life of everyone. The holiday season kick started with the excitement for the festival and the joy of going back home. The month summed up with equal ingredients of fun and responsibilities. Web and Media Committee hereby presents the 23rd Edition of Atharva for all its readers. Happy Reading!

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CSAM '18

Divya Pichumani

Team Matrix hosted Cyber Security Awareness Month '18 (CSAM'18) on October 6, 2018. The theme for this year was "Cyber Resilience". The students had brilliantly decorated the entire campus in accordance with the theme. Many students from other colleges actively participated in this event and made it a grand success. Dr. Dhanya Pramod, Director of SCIT along with Mr. Krishna Sastry Pendyala, Executive Director of PwC lighted the traditional lamp and inaugurated the event. Dr. Dhanya Pramod welcomed the various dignitaries and the students to CSAM'18 and gave them insights on how Cyber Resilience is playing a major role in today's changing environment.

Mr. Krishna Sastry Pendyala delivered the key note speech in which he spoke about the emerging cyber-attack trends and the threats associated with them. Mr. Kushaagra Mehra from Smokescreen Technologies gave a special talk in which he enlightened the audience about the modern approaches taken to build resilient systems.

The various dignitaries then took to the stage to engage the audience in a panel discussion on the topic "Benchmark Security Culture: Advanced Cyber Defense". Mr. Aannaaaand Deshpande, Privacy Counsel, Cognizant was the moderator for the discussion and introduced the audience to the topic and engaged all the panellists by presenting thought-provoking questions to them.

Mr. Siddhesh Parab, Risk Advisory - Cyber Risk, Deloitte spoke about the role of Robotics Process Automation in the Security field. Mr.Milind Thorat, Co-founder, Cyber Security Solutions LLP highlighted the need to have a common sense approach to securing organisational vulnerabilities. Mr. Pawan Desai, CEO, Mitkat Global Private Limited & Mitkat Advisory Services shared his views on the importance of getting the fundamentals right in order to succeed in implementing security. Mr. Narayan Neelakandan, Co-founder and CEO at Block Armour spoke about the need to bring in creativity even as security challenges and threat responses grow in sophistication.

The students then participated in Q&A session. Ms. Vidyavati Rambeke thanked the panellists and the audience for their active participation and contribution to the event.

Events like Felonious Exposius, Ripple Rumble and Qureka were conducted as part of CSAM'18. Felonious Exposius tested the crime scene solving capabilities of students while Ripple Rumble and Qureka engaged the students in quizzes on the latest trends in Information Security world.

The spirit of teamwork, leadership and innovation displayed by the students along with the combined efforts of the Management, Faculty and Team Matrix made the event a huge success.

ALUMNI MEET - PUNE CHAPTER

Haritha N

College days are cherished for life. When given an environment like that of SCIT where the students get nurtured over time, where they learn and experience things, it is definitely a bunch of memories that the heart holds forever. Coming back to the place where you belong is like coming back home. Having this in mind, Alumni meet, Pune chapter was held at Symbiosis Centre for Information Technology on 6th October, 2018.

The Alumni from various cities travelled all the way to Pune, to reminisce about their days at SCIT. The Alumni had come along with their families to proudly show that they all belonged to one single place that has always connected them - SCIT. The event started off with Dr. Dhanya Pramod, Director addressing the gathering and was followed by all the other faculty members sharing and recollecting their experiences with the alumni. They also expressed how happy they were to see the whole lot after a very long time. In order to make the day memorable, there were special performances from the college band, 'Konnect' and an excellent mime performance by one of the students.

Various events and games were conducted in order to add fun element to the day. Altogether, coming along with their families, showing them the place that has been the part and parcel of their two important years, traveling down the memory lane gave the gathering immense joy. The Homecoming meet, thus proved to be warm and welcoming and the alumni rejoiced each and every moment being a part of it.

QUANTUM COMPUTING

Dr. Mandaar Pande

This is the third in a series of blogs that I will be writing for everyone to get a basic understanding of this immensely important research field which is poised to become mainstream in a few years and significantly impact our daily lives. learn.

In this blog, I will be elaborating on the concept of quantum entanglement leading to quantum teleportation. Quantum teleportation is the process through which quantum information is transmitted. This results in the concept of quantum communications.

One of the most unusual, counterintuitive and fascinating aspects of quantum mechanics is the fact that two or more particles can become entangled. Quantum entanglement is a physical phenomenon which occurs when a pair or group of particles are generated, or interact, or are physically close to each other, in ways such that the quantum state of each particle cannot be described independently of the state(s) of the other particles even when they are separated by large distances. To explain such a system, a quantum state must be described for the system as a whole.

Let's take the simplest case of two particles. Let's denote the two particles as A and B. If these particles are entangled, it means that the values (after measurement) of certain properties of particle A are correlated with the values (after measurement) that those properties will assume for particle B. Most importantly, the properties are correlated even when the two particles are far apart in space – leading to the phrase attributed to Einstein when he called such a phenomenon as "spooky action at a distance".

A laser beam consisting of photons of a particular energy (or frequency) is passed through a crystal which behaves in a nonlinear fashion when the laser light passes through it. It has been experimentally observed that due the nonlinear optical property of the crystal, the photon of higher frequency gets converted into a pair of photons of lower frequency. More importantly this pair of photons is entangled and both these photons have correlated polarizations (that is the two photons either have the same polarization or one has a vertical polarization and the other a horizontal polarization). With reference to the explanation of entanglement that I have given above, the vertically polarized photon in the figure below, can be considered to be the particle A and the horizontally polarized photon as particle B and the property that we are measuring is polarization.

Let me explain the meaning of linear and nonlinear behavior of light so that whatever I have explained above makes sense. An example of linear behavior is a light beam (sunlight or from a torch) which, when incident on a prism or a rectangular block of glass, either reflects and refracts from the surface, as we have learnt in our school physics.A laser has very interesting properties, such as having a very coherent beam of high optical intensity, a single frequency of radiation and a focused and narrow light beam continuing to remain so even after traveling large distances (100s or even 1000s of kilometers). These unique properties of a laser can result in some materials behaving in a very unusual manner when a laser light is shone on it. For example, a laser beam passing through a material which is sensitive to high intensity light, can result in something called as frequency mixing. That is, the frequency of the light can change dramatically after passing through the material. The frequency of the output beam can become double or triple of the original. So, if the original frequency was 100 Hz, after passing through the material, it can double to 200 Hz, or triple to 300 Hz or in some cases become 100 or even 1000 times the original frequency. This is called as generation of the 2nd, 3rd or nth harmonic frequencies. This is an example of a nonlinear effect.

In some other cases, it can also result in an amplification in the input signal in the presence of another higher frequency signal. Or SPDC that I mentioned above is another example of a nonlinear optical phenomenon. There are other nonlinear phenomena that can occur such as, the refractive index of materials becoming dependent on the intensity of a laser and a host of other extremely interesting and non-intuitive phenomena. Some of these properties (such as amplification) have earlier been observed in electronic transistors and has resulted in all our fancy electronic amplifiers and other fascinating equipment including computers.

There is a lot of history attached to this extremely intriguing concept of quantum entanglement, involving one of the greatest physicists of the 20th century, Albert Einstein. As mentioned in the definition above, in an entangled system, the measurement of the physical properties of the entangled systems such as position, momentum, spin and polarization, are found to be correlated. As a result, measurements performed on one system seem to be instantaneously influencing other systems entangled with it. Paradoxically, it appears that one particle of the entangled pair "knows" what measurement has been performed on the other and with what outcome, even though there is no known means for such information to be transmitted or communicated between the two particles, which at the time of measurement may be separated by arbitrarily large distances.

In 1935, Einstein, Podolsky and Rosen discussed these counterintuitive predictions of strongly correlated quantum systems in a joint study which was published as a very famous paper. In this study the three scientists, formulated the EPR paradox (EPR stands for the names of the three scientists involved in the study), which was a thought experiment and which attempted to show that quantum mechanics was an incomplete theory. This paper generated a lot of interest among physicists about the foundations of quantum mechanics itself, though not too many research papers were published either

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of or against the study. In 1964 however, John Bell proved that one of the assumptions of the EPR study (called the principle of locality) was mathematically inconsistent with the theory of quantum theory. Details of Bell's paper are too technical to be explained here. For those interested in details, please read this Wikipedia page. John Bell has consistently been proved right by experimental evidence.

Numerous experiments have been performed demonstrating quantum entanglement with the latest being as recent as 2017 where Chinese physicist Jien-Wei Pan and his team have demonstrated satellite-based entanglement of a pair of photons separated by over 1200 kms.

Finally, quantum teleportation is a process in which quantum information (which is essentially information about the quantum state of a system) can be transmitted from one location to another using classical communication and a previously realized entanglement between the sending and receiving location. We will detail this out more in later blogs.

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STAR ALUMNI

GAURAV SEHGAL

Divya Pichumani

Star Alumni of October 2018 is Gaurav Sehgal. He is currently working as the Head - Global Tech Alliances Cloud, APAC, and Head – Cloud and Network Applications at Ericsson. He completed his MBA in Information Technology from SCIT in the year 2003. He worked as a Strategic Business Manager at Cisco Systems prior to joining Ericsson. He is an award winning Senior Sales professional with over 15 years of experience in managing large and diverse segments across Enterprise / Public Sector and Service Provider Accounts. He has a track record of providing ICT consulting to customers from concept through commercialization. His achievements in the field of IT are a motivation for all the students of SCIT.

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