THIAGARAJAR COLLEGE OF ENGINEERING

A Govt. Aided Autonomous Institution Affiliated to Anna University

DEPARTMENT OF INFORMATION TECHNOLOGY

PROUDLY PRESENTS

ITUNES

INNOVATING CREATIVE MINDS

Technologies for revamping healthcare in Covid scenario

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The perfect choice for the creative ones

VISION AND MISSION

Vision of TCE

World class quality technical education with strong ethical values.

Mission of TCE

- Academic excellence in Science, Engineering and Technology through dedication to duty, commitment to research, innovation in learning and faith in human values.
- Enable the students to develop into outstanding professionals with high ethical standards capable of creating, developing and managing global engineering enterprises.
- Fulfill expectations of the society and industry by equipping students with state of art technology resources for developing sustainable solutions.
- Achieve these through team efforts making Thiagarajar College of Engineering the socially diligent trend setter in technical education.

Vision of IT Department

Evolve into a Centre of Excellence for education and research in information technology

Mission of IT Department

- Attaining academic excellence through well designed curriculum adaptable to dynamic technological needs, competent faculty and innovative teaching learning process.
- Promoting collaborative research through special interest groups, state of the art research labs and industry institute interactions.
- Facilitating value added courses to produce highly competent and socially conscious information technology professionals and entrepreneurs.

Programme Educational Objectives

B.Tech (Information Technology) Programme

PEO 1. Graduates of the programme will provide IT solutions to address the business and societal needs.

PEO 2. Graduates of the programme will contribute significantly in the technological developments of Information Technology through research practices.

PEO 3. Graduates of the programme will hone their professional expertise in quest for improved career opportunities through sustained learning.

PEO 4. Graduates of the programme will lead a team of diversified professionals with good communication skills, leadership virtues and professional ethics.

Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

What's Inside?

Editors

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Dr. D. Tamilselvi

Mrs. S. Thiruchadai Pandeeswari

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G. L. Sankara Subramaniyan

S. Vishnu Vardhan

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M. GA. Ragul

A. Manoj

Design Team

G. L. Sankara Subramaniyan

A. Manoj

Editors Desk

Hey All, we are very happy and delighted to meet you with yet another new edition of iTunes. This is the first edition of this new semester. Last year didn't pan out as we expected. There could be a lot of areas where we could not put the best of us. We have yet another brand-new year before us, where we could bring out the BEST in us and achieve the BEST. As it goes as a new year, new semester, iTunes is never going to be the old one again. The theme has been chosen with the current problems and trends so that you can explore more about it and enhance yourself. There are a lot of new articles included, that would build your knowledge and prepare you for your placement and career. I would proudly say that iTunes has been a great platform that showcases the ideas, innovations, thoughts, and achievements of the faculty and students to the entire department. We would specially thank the faculty coordinators, Dr. D. Tamilselvi and Mrs. S. Thiruchadai Pandeeswari for their support and guidance. I would also like to thank all the editors, designers, and writers of this edition for your contribution. Our readers are of the utmost concern for us, and we thrive to fulfill their expectations. We feel proud of the students who continuously send articles to us and our hearty congratulations to the faculty and student achievers. So, spend time and read every article to develop yourself.

"It is what you read when you don't have to, that determines what you will be when you can't help it." – Oscar Wilde

Best Wishes,

Suvisesh Daniel S, III Year

Success Story

Transformation of Student to Entrepreneur

We are alumni of the Information Technology department (M.Bhavani Devi & S.Sai Naveena Sri) from the batch 2016-2020. While pursuing our regular course, we had a thought to do something note-worthy for our society with technological support but we didn't have idea initially, at that time we guys attended two day's workshop on Virtual Reality applications in Cognitive Science (27th & 28th September 2017) conducted by CSRG (Cognitive Science Research Group) with Industrial expert M/S.Kewaunee Labway India Pvt Ltd. That workshop experience explored this technology which is new to us. This initiated us to join CSRG SIG in the second year (3rd semester) under the guidance of Dr. D.TamilSelvi. Initially, we don't have any clear-cut interpretation like 'how to start' or 'where to start. At the time, we attended a regular meeting conducted by our seniors, they guided us to pursue this technology furthermore.

Later we have undergone intensive training in college as the student internship project under CSRG SIG as a part of Summer Intern (May 2018). As our SIG got DST-CSRI (Department of Science & Technology– Cognitive Science Research Initiative) funded Project titled "Virtual Reality based Cognitive Rehabilitation for Autism Children to improve their Social Behavior" with the research grant, virtual reality and augmented reality lab is set up under the SIG. On a regular basis, we visited Autism school/Centre and interacted with autistic children, special educators, doctors, and therapists to know the major difficulties faced by autistic children in their daily activities.

By this observation, we got a clear vision of "How to improve the autism of children for their daily basis activities with the help of AR/VR technology".

Based on the requirements, we guys created an android application with AR technology. Initially, we demonstrated the application to the doctors/therapists /special educators/parents. Implementing this application to these autistic children (with Doctor's guidance) brought notable improvement in their activities, when compared to the traditional method of learning. We have also undergone a student internship project under CSRG as a part of Summer Intern (May 2019). We got a 3 day's intern (26th to 28th August 2019) at Kewaunee Labway India Pvt Ltd in the area of Virtual Reality. We had implemented a Mini project based on our TCE classroom & our CSRG lab bringing up Virtual Reality. As a student coordinator gave a hands-on Training Workshop on "Virtual Reality & Augmented Reality" with the help of Academic experts from IIT Madras, Industry Experts from M/s. Kewaunee Labway, Bangalore on the 3rd and 4th October 2019.

Apart from this, we bagged an internship (4th to 10th December 2019) at M/s. Kewaunee Labway Private Limited, Bangalore, Karnataka for one week and hired for placement. We had also organized a summer internship program for junior students for a week during Dec 2019. We had brought out a publication on "Cognitive Rehabilitation for Autism Children Mental Status Observation using Virtual Reality based Interactive Environment" in Springer IHSI (Intelligent Human System Integration) Meet held in Italy during Feb 2020.

We both got the internship and worked under the guidance of Dr. Kaushal Kumar Bhagat, Assistant professor, Centre for Educational Technology, IIT Kharagpur for the duration of two months (Feb-March 2020) and also got an internship in the Department of Design, IIT Hyderabad. During this Covid-19 lockdown, we are very fortunate to learn the Coursera courses sponsored by TCE and enrich our knowledge in AR/VR technology. We have the next publication during Covid-19 lockdown on "MIVRA

(Mental Immersion in Virtual Reality Avatar) - Social Communication Rehabilitation Assistive Tool for Autism Children" in Springer ICIICT 2020 Meet held at NUS, Singapore during December 2020. After the IIT internship, we have explored the possibilities of bringing about more ideas by converting a project into a product. This made us to Startup the company with AR/VR technology with a mission of giving technology-based therapy for autistic children with great encouragement and support from TCE-TBI.

We are very glad to thank TCE-TBI support for guiding us to start TXR (Thiagarajar eXtended Reality) Solutions with effect from 1 December 2020. Hope we will make our concern a Benchmark for the new startups.

Articles

Technologies for Revamping healthcare in COVID scenario

It's a remarkable story that is playing out in the technology-led enablement at the back end of healthcare organizations, even as the headlines are dominated by the heroic response efforts at the front lines of care.

THE SUDDEN UPSCALING OF VIRTUAL CARE CAPACITY:

Front line healthcare workers have been swamped since the coronavirus outbreak by the number of calls from patients who want to speak with their doctors about possible symptoms of covid-19. Many health systems are turning to self-triaging tools to help consumers check for symptoms before asking to be put through to a doctor. Providence Health in Washington State, which was ground zero for the pandemic in the US, has reconfigured

their chatbot Grace with FAQ assessments related to COVID-19 symptoms. To put the numbers in perspective, virtual visits were 10-15 times more than pre-pandemic levels.

Out of every crisis, a new opportunity arises. For telehealth, it may be an opportunity whose time has finally come. The volumes of telehealth consults have gone up several multiples since the pandemic struck. John Kravitz of Geisinger health has seen a 500% increase in telehealth visits within the first couple of weeks since the outbreak. The use of telehealth has been growing in the past years though more slowly than expected. One major cause has been the lack of a reimbursement model for telemedicine that puts it on par with in-person visits. We may be seeing a tipping point that takes telehealth mainstream in one stroke, transforming the way we experience healthcare in the future.

The covid-19 pandemic has affected many sciences, space, and technology institutions, and government agencies worldwide, leading to reduced productivity in a number of fields and programs. It has also opened several new funding research lines in several governmental agencies around the world.

The need for accelerating open scientific research made several civil society organizations create an open covid pledge asking different industries to release their intellectual property rights during the pandemic to help find a cure for the disease. Several tech giants joined the pledge. The pledge includes the release of an OPEN COVID license. Organizations that have been longtime advocates for open access such as creative commons implemented a myriad of calls and actions to promote open access in science as a key element to combat the disease.

The digital institutes are pooling supercomputer resources toward drug discovery, medical protocol development, and public health strategy improvement as well as awarding large

grants to researchers who proposed by May to use AI to carry out similar tasks. In March 2020 the distributed computing project launched a program to assist medical researchers around the world. The ETERNA open vaccine project enables video game players to design an mRNA encoding a potential vaccine against the novel coronavirus.

- SNEEHA S (63 005)

Technologies for Revamping healthcare in COVID scenario

The tech that could be our best hope for fighting covid 19. Nowadays, Technology is important because it makes you feel more secure in every area of life for both personal and business reasons. The various kinds of advanced technologies are developed and some are developing in our world. During covid time technology plays a vital role than humans. Some of the technologies are mobile tech, Artificial intelligence, contact tracing, virtual assistants, temperature screening, diagnosis, robotics, etc. Artificial Intelligence (AI) is one of the most famous technologies in our world. Because in the future we will use AI tech in day-to-day life. In covid 19 AI plays a major role in our world. With the use of AI, more accurate forecasting about disease spread, medication, treatment, etc., could be done. AI in reducing the burden from medical practitioners & healthcare staff. The presence of fever is one of the key symptoms of COVID-19 infection. Therefore, governments and health systems across the globe are working to build capabilities for mass temperature screening through thermal scanning and imaging technologies. In India, mobile technology will be used for mass inoculation against the pandemic. Mobile technology has enabled benefits worth billions of dollars to reach the deserving and also helped the poor and vulnerable during the pandemic.

"It is also with the help of mobile technology that we will embark on one of the world's largest Covid-19 vaccination drives," With the use of mobile

technology, the temperature of our body is measured. Mobile technology such as smartphones is playing an important role in this pandemic, by launching apps to track coronavirus infected people. These apps are very easy to use and provide self-isolation guidelines as well as other safety tips. Like this, many of the technologies are developed during covid 19 in various countries. Telehealth With the digital revolution, telehealth is evolving from clinics to the home.

Nowadays, many techs are developing and it is not reaching all over the world especially on the village side. Future will be the only digital mode of activities. So, in the future, we have to depend upon technology. By this illiterate people will face difficulties. But some of our advanced technologies are very easy to use. Some are hard to use. So, we have developed any platform which is easy to learn and access easily and quickly by everyone.

Technology should improve your life_ not become your life.

- **PRIYADHARSHINI. N (63 814)**

Puzzle Corner

1. You are in a dark room where a table is kept. There are 50 coins placed on the table, out of which 10 coins are showing tails and 40 coins are showing heads. The task is to divide this set of 50 coins into 2 groups (not necessarily the same size) such that both groups have same number of coins showing the tails.

Technologies for Revamping healthcare in COVID scenario

Dear readers,

"Technology is ubiquitous like air which is seen everywhere."

In this socially distanced world, the main thing we must be careful about is health care. The meaning of health care is "the organized provision of medical care to individuals or a community" It could have been easy these many years without any pandemics but recent times made it hard. We, the developed living being must do something to adapt to the new normal. It might be hard but not impossible. To be precise all we use today is the technology as told before, starting from sanitizers to temperature checkers. But these are not enough for this new normal. Some of the best technological inventions that seemed the best to me are the Remote surveillance of patients on ventilators (because it helps to protect the front-line workers from unnecessary exposure to infection), Rapid testing (rapid testing will reduce backlogs and allow hospitals to replace temperature scans with actual virus tests)and so on. With these, the robotic technology can be added for monitoring the patients so that we could reduce the exposure to the virus. Telemedicine is also an effective way which is introduced in some parts of the US where they safely screen and treat patients from remote places. Autonomous vehicles and drones have also helped a lot by delivering goods and drugs to affected patients or areas.

The famous saying "search from where you lost" can be modified as "search from where it came" to covid19. This saying means follow china's way of controlling the pandemic. Some of the effective technologies they use are sanitizing robots, Satellite monitoring, drone technology which has shown a mass improvement in health care. Moreover, the point is to follow social distancing and sanitizing to decrease the amount of patients and also to increase healthcare systems. There are numerous

technologies but it is in the way how we use them. The more we use more effective the results will be. Thank you for your time for reading this article. Hope you have gained some ideas regarding the technologies that can be used to revamp healthcare in this pandemic.

stay distanced! stay sanitized and stay masked...

- SWETHA S (20IT109)

Puzzle Corner

2. You have two sand timers, which can show 4 minutes and 7 minutes respectively. Use both the sand timers(at a time or one after another or any other combination) and measure a time of 9 minutes.

Technologies for Revamping healthcare in COVID scenario

Our regular life and expected lifestyles was entirely changed by the arrival of the new coronavirus -(covid 19) pandemic. We all were given orders to stay in the home to fight against this new coronavirus. The deaths due to covid has crossed 2 million across the world, Even Though the medical field has more technical improvements we still didn't have any permanent cure for this coronavirus,We are still fighting against this virus. Coronavirus spread across the people mostly through physical contact. However, The existing Technologies in the world helped common people to fight against this virus through social distancing ,work from home, online lectures etc., first let's talk about some of the technologies that helped us to fight the covid 19 pandemic.

1. Online Learning

The technology often ,parents, feel as a curse to children is

smartphones. But smartphones and various computer devices are now helping their child to continue their learning from Home during this inevitable pandemic situation.

2. Work From Home

The newer trend of field work is WORK FROM HOME Which allows a man or women to continue their job in this pandemic situation by working from home with the use of computers and internet.This allows an business man to be always connected with his family.

3. Contactless deliveries and robotics

Man used drones and various robots to deliver and serve humanity. This helped the people to buy groceries and regular needs from home without any physical contact with the seller or buyer. Now people were able to get all their needs through online marketing with the help of drones and robots.

4. Tracing the Health

The development of new apps like aarogya has helped people to track the spreading of coronavirus and helped them in taking precautions. The CCTV cameras helped the government to trace the movement of people. The government also used caller tunes to spread awareness on this new covid-19 pandemic

5.Technical improvement in medical field

Infrared and wireless Thermometers are now mostly used to identify the body temperature immediately. Also the development of AI and various technical development in medical field has helped doctors and researchers to study a lot about the structure and effectiveness of this newly formed coronavirus ,they are also able to found out the origin of the virus through these technical improvements

Needed Improvements In Technology

As far we've seen How useful the technology is to us in this pandemic situation. However the Technological improvements were not completely utilised by humans because of its cost. The delivering drones and serving robots are way more expensive for everyone to afford. The Work from Home is in favour for most of us. However, This Work From Home is not suitable for everyone (most likely suitable only for cs professional).Also still more than 50% of India's population consist of farmers who are not more aware of these growing Technologies. In my opinion, The growth in technology has to be made to reach almost every single citizen of India and the world so that these improvements can be used by the people more effectively.

Not only this , If we manage to create a new device which can be used by common man to identify the presence of corona virus in them that'll be more effective and save a lot of lives and cost as well . So If we start to work on something newer, we'll be able to make a change and come out from this pandemic situation and restore our freedom.

Final Note

The development of technology is neither useful nor harmful.. The people who utilise it in the correct way found technology to be useful and the people who utilise it for wrong purpose make it harmful. It's all not about the

development of technology, it's about the man who uses it .. we have to keep a track on growing technology and utilise it in a very wise way..

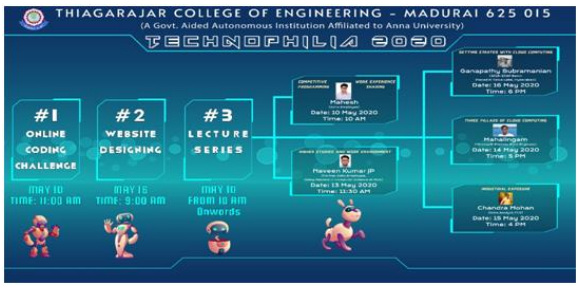
- **Rahul Prasanna T.S (63525)**

IT ASSOCIATION ACTIVITIES

Technophilia 2020

A series of technical events conducted for the second years along with lectures for rendering more knowledge via Google meet, hackerrank, Google forms during 10th – 16th May 2020

Faculty In charge: Ms.K.Indira



Lecture series:

1. Topic: Competitive Programming and work experience

Students learnt the importance of competitive programming from Mr.Mahesh Aravind S(Member technical staff Zoho Corporation Pvt Ltd) , Resource person of the event on 10th May 2020.

2. Topic: Higher Studies And Work Environment

Mr.Naveen Kumar JP,Former Zoho Employee,At present doing Masters in Computer Science at NUS has been an eye opener for students about higher studies and commercial work environment on 13th May 2020.

3. Topic: Industrial exposure

On 15th May 2020, Mr. Chandra Mohan, Data Analyst at TCS shared his experience on industrial exposure to students and session made the students understand How people work inside industries .

4. Topic: Getting started with cloud computing

Mr.Ganapathi Subramanian(2016-2020 Batch,Placed in Value Labs, Hyderabad) helped second year students to kickstart their interest towards cloud computing on 16th May 2020

Inauguration of IT Association

Marked the beginning of IT association activities for the academic year May 2020 – May 2021 on 23rd August 2020 via Google meet

Presence of Mr.M.Mahalingam(Premier Field engineer, Microsoft, Hyderabad), Dr.S.Mercy Shaline (Principal, Thiagarajar College of Engineering) made the inauguration more special.

Elixir 2020

A series of technical events to challenge the student's skills.under Ms.K.Indira on 12th September 2020 through Google meet

Code marathon

Coding event conducted for the then first and second years to enrich their problem solving skills on Hackerrank with about 58 teams.

Crack the campus recruitment

An interactive session where seniors shared their placement experiences and the students got to interact with them.The event went through with wonderful experiences of seniors and being an impressive start for third year students to start the journey of placement organized by Ms.K.Indira with two sessions on 14th and 22nd October 2020 in Google meet

INFINIX 2020

Technical events and workshops to kindle the student's interests in the tech world.

under Ms.K.Indira on 23rd November 2020 via Google meet and Google forms

Coding Contest

An event to test the coding skills of students, covering different ideas. The students will be asked to solve problems of all levels.

Digital Scavenger

A virtual treasure hunt event where the students will be tested with the general aptitude in 5 different rounds. The final round will be based on the clues hidden in all the previous questions.

We heartily congratulate **SHUBHAVYA K** (19IT090), **JEYA GANESH A V** (19IT041), **SIDDHARTH S** (19IT093) for excellent win in the Digital Scavenger.

Tech Debate

An interesting tech battle with different technologies. Students will be given the topics a few minutes prior to their turn and they will have to prove their point on Google Meet

All the JS and JT of the IT Department were the judging panel of the event.

Tech debate

Topics:

Development of AI over Humanity

iOS vs Android

APARAJITHAN.M.V.V - 19IT008 (2nd year), **DAYA ANAND.C.H** - 19IT019 (2nd year) were announced as winner for their mind blowing performance and special mentions to **SOWMIYAN.R.S** - 18IT094 (3rd year)

Workshops

A series of workshops were organized especially for second year students.On 24th November 2020 ,G.L.Sankara subramaniyan of third year made a hands on session on Postman API tool

On 27th November 2020, Suvisesh Daniel and Vishnu Vardhan of third year enlightened the student with basics Data science. Joint treasurers of Association upskilled students on Machine learning on 30th November 2020

TECHNOVA 2021

The second event of TECHNOVA 2021. It was conducted exclusively for freshers of the department

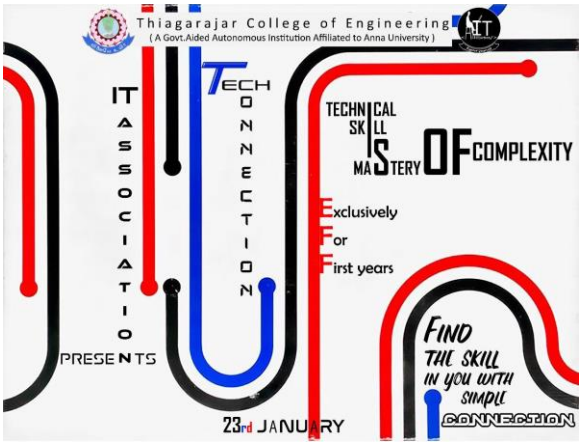
Logotrix

The contest is all about designing a creative logo for the IT association coordinated by Nirmal J, Janani Priya, Shanmuga Sangavi, Raveena Sri of third year under Ms.K.Indira

On 20th January 2021, A hot platform to discuss the hot topics of tech organized by G.L. Sankara Subramaniyan, V. Gomathy, V. Saranya, T. Yogith, Reethika, Subasri under Ms.K.Indira

on 15 – 17 January 2021. We congratulate **Rahul Prasanna T S, Gokila harini krishna k, Swadhesh P U** for winning the event with excellent logo designing skills.

Tech connections



A fun game turned technical connecting the images to find a tech word organized by Pavitharani, Prasitha, Jennifer Priscilla, Aishwarya,Raxalyn,Subiksha on 23rd January 2021

Winners: **Shubhavya K, Gokila harini, Shreeram**

Debwin from Tech Tycoon won the event.

WEBINARS

An interactive webinar on Java programming and fundamentals from scratch from Ms.M.Sailaja, member technical staff at zoho on 30th July 2020

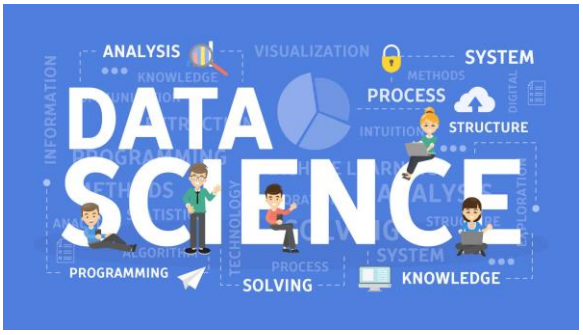
Puzzle Corner

3. Why are manhole covers round?

ACM AI Study Circle

Webinar on Data science

AI Study Circle in association with ACM conducted a webinar on Data Science on 16th January 2021 with resource person,R.Aruna Devi to gain exposure in Data Science



Discussion on Python Packages - Panda, Numpy

Students gained Hands-on practice on Discussion on Python Packages - Panda, Numpy by R.Aruna Devi 22nd January 2021.

INTERVIEW PUZZLES

1. You are in a dark room where a table is kept. There are 50 coins placed on the table, out of which 10 coins are showing tails and 40 coins are showing heads. The task is to divide this set of 50 coins into 2 groups (not necessarily the same size) such that both groups have the same number of coins showing the tails.

Answer :

Divide the group into two groups of 40 coins and 10 coins. Flip all coins of the group with 10 coins.

2. You have two sand timers, which can show 4 minutes and 7 minutes respectively. Use both the sand timers(at a time or one after another or any other combination) and measure a time of 9 minutes.

Answer :

Start the 7 minute sand timer and the 4 minute sand timer.

Once the 4 minute sand timer ends turn it upside down instantly.

Once the 7 minute sand timer ends turn it upside down instantly.

After the 4 minute sand timer ends turn the 7 minute sand timer upside down(it has now minute of sand in it)

So effectively 8 + 1 = 9.

3. Why are manhole covers round?

Answer:

Manhole covers are round because it's the only shape that cannot fall through itself. The cover can never accidentally fall down the hole.

4. One person has some money in his pocket, He visits four temples on the way. As soon as he enters a temple, his money gets doubled and he offers Rs. 100 in each temple thus his pocket gets empty after he returns from the fourth temple. Now the question is how much money he had initially?

Answer:

Let's assume, person starts with Rs x

After 1st temple visit, he is left with Rs (2x-100)

After 2nd temple visit, he is left with Rs (4x-300)

After 3rd temple visit, he is left with Rs (8x-700)

After 4th temple visit, he is left with Rs (16x-1500), (Empty ,0)

Hence he started of with x i.e. Rs 1500/16 i.e. Rs 93.75

Answer: Rs 93.75

5. How many squares are on a chessboard?

Answer:

A 1×1 square can be placed on the chess board in 8 horizontal and 8 vertical positions, thus making a total of 8 x 8 = 64 squares.

Let's consider a 2×2 square. There are 7 horizontal positions and 7 vertical positions in which a 2×2 square can be placed. Why? Because picking 2 adjacent squares from a total of 8 squares on a side can only be done in 7 ways. So we have 7 x 7 = 49 2×2 squares.

Similarly, for the 3×3 squares, we have 6 x 6 = 36 possible squares. So here's a breakdown.

1×1 8 x 8 = 64 squares

2×2 7 x 7 = 49 squares

3×3 6 x 6 = 36 squares

4×4 5 x 5 = 25 squares

5×5 4 x 4 = 16 squares

6×6 3 x 3 = 9 squares

7×7 2 x 2 = 4 squares

8×8 1 × 1 = 1 square

1^2 + 2^2 + 3^2 + . . . n ^2

Total = 64 + 49 + 36 + 25 + 16 + 9 + 4 + 1 = 204 squares

SIG

DATA ENGINEERING

1)Faculty Coordinator: Dr.Sridevi.S
Student: Aakash V
Year: III
Achievement: Book Chapter Publication In Wiley

Forecasting of covid 19 spread rate and fatality rate is calculated using xgboost lstm and polynomial regression techniques. So that government can take appropriate actions in prior based on the count.

Link:
https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781119785620.ch12

2)Faculty Coordinator: Dr.R.Suganya
Student: ArunaDevi.R
Year: III
a. Achievement: Paper Publication
Status: Published

In the title of the paper **"COVID-19 Forecasting using Multivariate Linear Regression".** The objective of this research is to propose a forecasting model using the COVID-19 available dataset from top affected regions across the world using machine learning algorithms. This paper will be published in a special issue of the Journal of The Institution of Engineers (India) – Series B on "Data Science for Global Crisis: COVID-19 and Beyond".
Link:
https://www.researchsquare.com/article/rs-71963/v1

b.Achievement : Paper Publication
Status :YTBP

The Title of the paper is **"Forecasting spread of COVID-19 using Regression Algorithm".** This research aims to apply Linear Regression to predict the number of confirmed COVID-19 cases for a span of fifteen days. It has been accepted for oral presentation during 10th International Conference on Soft Computing for Problem Solving - SocProS 2020 to be held at Indian Institute of Technology Indore. In December 18-20,2020, Oral presentation was done by online mode. This paper will be published in the Book series 'Algorithm for intelligent System' Springer journal.

DISTRIBUTED SYSTEMS

3) Faculty Coordinator: Ms.M.Thiruchadai Pandeeswari
Student: Srilakshmi.S
Year: III
Achievement: Paper Presentation

Presented paper entitled "**Container Based LAB-AS-A-SERVICE APPLICATION**" in International Conference on IoT and its Applications 2020 (ICIA-2020) on 27th December 2020. In this paper we proposed container based lab using Docker technology which is very feasible and lightweight solution compared to virtualization solutions. We can easily perform java, python, C programming and ITOM (linux commands) with this application without the need of installations for programming environments.

INFORMATION SECURITY AND MANAGEMENT

Faculty Coordinator : Mr.M.Thangavel
Student : Sowmiya.B
Year: III
Achievement : Paper Publication
Status : YTBP

Paper Title :" Survey on Privacy and Security issues in Contact Tracing Applications ".

Contact tracing applications work by gathering information from people who have tested positive for the virus and so locating and notifying individuals. All of the user's information is employed and picked up, we found that users' information can be transmitted on-line and stored solely in an aggregated format. There's major divergence among nations, however, between a "privacy-first" approach that protects citizens' information at the price of very restricted access for public health authorities and a "data-first" approach that stores massive amounts of knowledge that, whereas of immeasurable price to epidemiologists. In order to solve this issue proposed a solution with AES algorithm. Presented this paper in 6th International Conference on Cyber Security, Privacy in Communication Networks(ICCS) on December 29th ,2020.Our paper is accepted for publication in SN Computer Science(Springer).

INTERN SELECTED STUDENTS

Name	**Year**	**Company/Institutions**
Soughanthika.S	III	Fidelity Investments
Sudersan S	III	Fidelity Investments
Kumaresh O D	III	Walmart Global Tech India
SankaraSubramaniyam.G.L	III	RuTag of Pals,IITM
Subiksha G.B	III	RuTag of Pals,IITM
Sowmiya B	III	Jakstech Solutions
SankaraSubramaniyam.G.L	III	Jakstech Solutions
Yajith Vishwa	III	Jakstech Solutions
Vinoth Kannan	III	Jakstech Solutions

STUDENT ACHIEVEMENTS

REG NO /NAME : Gomathy.V
YEAR : III
ACHIEVEMENT:
Promoted as CADET UNDER OFFICER in NCC.

REG NO /NAME : Saravanan.P
YEAR : I
ACHIEVEMENT:

Won “author of the week” editor's choice award for writing tamil story titled Veera iruvar in storymirror last year.

Author Of The Week

CERTIFICATE - EDITOR' CHOICE

StoryMirror is delighted to award

saravanan

for publishing a content in **Tamil** .

Based on its eminence, the content has been elected as

'Best Content of September week 5'

We heartily congratulate you.

Bibhu Datta Rout
CEO & Co-Founder

REG NO /NAME: 18IT092,Srilakshmi S.S

YEAR: III
ACHIEVEMENT:

a. Successfully completed Microsoft's Engineering: Undergraduate & Masters Asia Virtual Internship, offered by Forage over the period of July 2020 to October 2020. It was a virtual training program which improves my skills and learnt work ready skillsand corporate skills and also understood the Microsoft's culture, values.

b. Presented paper entitled "CONTAINER BASED LAB-AS-A-SERVICE APPLICATION" in International Conference on IoT and its Applications 2020 (ICIA-2020) on 27th December 2020. In this paper we proposed container based lab using Docker technology which is very feasible and lightweight solution compared to virtualization solutions. We can easily perform java, python, C programming and ITOM (linux commands) with this application without the need of installations for programming environments.

Forage
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S.S. Srilakshmi
Engineering: Undergraduate & Masters Asia Virtual Experience Program

Certificate of Completion
October 29th, 2020

REG NO /NAME : 19IT018,Charupriya S
YEAR : II

ACHIEVEMENT:
Successfully completed project based Machine Learning internship in ACM IIT Dhanbad. This is a four week project based internship including Predictive analysis, Movie recommendation system and so on. We worked for this internship as a team from many different states in India.

CERTIFICATE:

NLP – Natural Language Processing

What's NLP?

With the increase in the use of social media the amount of unstructured data being generated is enormous. Natural Language Processing aka NLP is a field of Artificial Intelligence that gives the machines the ability to read, understand and derive meaning from human languages. NLP represents the automatic handling of natural human language like speech or text, and although the concept itself is fascinating, the real value behind this technology comes from the use cases.

Speech recognition and NLP:

Speech is a vital part of communication between human beings. There are multiple languages, but the human can adapt to learn few languages whereas the machines can learn based on the proper training sets. The translation application in Google translator leads people to translate from a X language to Y language. Nowadays the websites and email have the option of translating the sites and emails. The initial datasets are from the utf codes as ascii codes for character recognition are being well developed for different languages. In India, we have INDICs the character recognition set and still the development is continuing for the OCR pattern recognitions for Indian language.

Speech recognition is another level of pattern identification by the pitch and

tone of the sound's generation. Human languages with proper consonants and vowels generate different patterns of sound wave amplitudes and frequency notes. Fourier Transform analysis in machine learning does the classification of such patterns.

Applications of NLP:

- Prediction of diseases
- Sentiment analysis
- Chatbots
- Voice driven interfaces like alexa
- Fake new identification and so on

Conclusion:

From JAKS we are working on the product based on NLP, in 2 aspects – Text to Speech and Speech to Text. In that we are focused on developing the machine learning algorithms like Lemmatization, tokenization, contextual reasoning, and so on.

NLP is blooming in all domains of real life. From Alexa to healthcare bots from predicting diseases to assessing reviews through sentiment analysis NLP is playing a great role making life easier. Innovations in the field of NLP are the need of the hour.

Reference materials:

https://towardsdatascience.com/your-guide-to-natural-language-processing-nlp-48ea2511f6e1

Article source: Jackstech solutions

G.B.Subiksha

3rd year