



VISION AND MISSION OF THE INSTITUTION

Vision

To be one of the premier Institutes of Engineering and Management education in the country

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country
- To develop leadership qualities, team spirit and concern for environment in students

Objectives

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution
- To make teaching-learning process an enjoyable pursuit for the students and teachers

VISION AND MISSION OF THE DEPARTMENT

Vision

To be a premier department of learning in Information Science and Engineering in the state of Karnataka, moulding students into professional Engineers

Mission

- Provide teaching-learning process that develops core competencies in Information Science and Engineering to meet the needs of the industry and higher education
- Create an environment for innovative thinking and self-learning to address the challenges of changing technology
- Provide an environment to build team spirit and leadership qualities to succeed in professional career
- Empathize with the societal needs and environmental concerns in Information Science and Engineering practices

Michael R. Anderson



Michael R. Anderson is federally certified and internationally recognised as an expert in the field of forensic computer science. He was involved in the development of computer forensics procedures, certification and training methodologies that have become the standards used by law enforcement computer forensics specialists throughout the world.

He worked as a Special Agent/Computer Specialist with the Criminal Investigation Division of the Internal Revenue Service. The Internal Revenue Service distributed his search warrant program worldwide and it is still used in some areas of law enforcement.

Michael Anderson was the primary founder of New Technologies, Inc. He has trained over 2,500 law enforcement and military computer forensics specialists and hundreds of computer forensics specialists from all the Big 4 accounting firms, Fortune 500 corporations, U. S. State Department, the FBI, U.S. Customs, the National Security Agency, the Environmental Protection Agency, the Central Intelligence Agency, the Secret Service, U.S. Department of Defence, DEA, National Security Agency and many other government agencies. He has also trained computer specialists from the Royal Canadian Mounted Police, the Australian Federal Police and the Singapore Police Force.



B. N. M. Institute of Technology

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Message from the Editorial Team

Greetings from the editorial team! It gives us immense pleasure to present the second issue of the seventh volume of our department newsletter 'INSPIRE'. We feel privileged to present our theme “Digital Forensics”, inspire and provide a forum to exchange ideas. The process of preserving, identifying, extracting and documenting computer evidence for use in court is known as digital forensics. It provides the forensic team with the best techniques and tools to solve complicated digital-related cases. The edition will inspire you to be the part of change that technology can bring to this world. We hope you enjoy reading this issue as much as we have enjoyed presenting it.

About the Department

The department was established in 2001 with an intake of sixty students. The department has been accredited by the National Board of Accreditation (NBA) for the academic years 2022-23, 2023-24 and 2024-25. Since its inception, the department has forged a path of technical excellence and innovative teaching methods. It comprises highly qualified, research-oriented teaching staff, committed to instilling moral values among students, in addition to providing cutting edge technical knowledge. The department has well equipped laboratories with state-of-the-art computational facilities.

Students are encouraged to participate in technical events and to conceptualise innovative ideas. The department is associated with many professional societies such as IEEE, CSI, BITES etc. The Information Science & Engineering Association (ISEA) regularly organises technical events for the benefit of students.

Digital Forensics



Introduction

Digital forensics is the process of identifying, preserving, analysing, and documenting digital evidence. This is done in order to present evidence in a court of law when required.

It focuses on the recovery and investigation of the materials found in digital devices related to cybercrime. Although the first computer crime was reported in 1978, followed by the Florida computers act, it wasn't until the 1990s that it became a recognized term. It was only in the early 21st century that national policies on digital forensics emerged.

History of Digital Forensics

Looking back at the history of digital forensics, law enforcement during that era had a minimal understanding of the application of digital forensic techniques. However, during the 1970s and 1980s, the forensics team was mostly composed of representatives of federal law enforcement agencies with a computer background. The first area of concern for law enforcement was data storage, as most documentation happened digitally. Undeniably, seizing, retaining, and analysing the documentation was a long task for the authorities. In this situation, the FBI launched the Magnet Media programme in 1984, which was the first official digital forensics program.

Usage of digital forensics in an investigation

Digital footprint is the information about a person on the system, such as the webpages they have visited, when they were active, and what device they were using. Cyber forensic investigators can recover deleted files, crack passwords, find the source of the security breach and much more. Once collected, the evidence is then stored and translated to make it presentable before a court of law or for police to examine further.

Steps to be followed in Digital Forensics

In order for digital evidence to be accepted in a court of law, it must be handled in a very specific way so that there is no opportunity for cyber criminals to tamper with the evidence.

1. **Identification** : Finding the evidence, noting where it is stored.
2. **Preservation** : This includes preventing people from possibly tampering with the evidence by isolating ,securing and preserving the data.
3. **Analysis** :Reconstruct fragments of data and draw conclusions based on the evidence found.
4. **Documentation** :Creating a record of all the data needed to recreate the crime scene.
5. **Presentation** :Summarise and draw a conclusion.

Soujanya S
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4th Semester

Challenges in Digital Forensics

Computers were predominantly used as industrial appliances from the 1960s through the early 1980s, owned and used by businesses, academic institutions, research facilities, and governmental organizations. They needed a massive physical infrastructure, including copious quantities of electricity and air conditioning, as well as a highly qualified and devoted workforce. Their primary role was data processing. Computers originally attracted the attention of information security, legal, and law enforcement groups in this capacity. *Crime by Computer*, written by Donn Parker in 1976, is perhaps the first book to describe the use of digital evidence in criminal investigations and prosecutions.

Today, the majority of communication takes place online. Information creation occurs and is filmed, broadcasted, processed, and kept in electronic form. Every element of our everyday lives is influenced by digital information. Although it has many technological and financial benefits, it has also brought about new problems and significant changes.

Digital forensics saw somewhat of a "Golden Age" between 1999 and 2007. Digital forensics at this time evolved into a kind of magic window that could look into the past by recovering residual data that was assumed to have been destroyed, through the recovery of email and instant messages. The so-called "CSI Effect" was brought about by forensic science being so popular and trustworthy that it left the lab and appeared on television.

Most of the development that has happened over the previous ten years is swiftly losing relevance. There is a problem in digital forensics. Hard-won skills are at risk of being compromised or even lost, because storage devices are getting bigger, there is often not enough time to take a forensic picture of a target device or to analyse all of the data once it is discovered. Storage devices can no longer be easily removed or imaged due to the rising use of integrated flash storage and the expansion of hardware interfaces. Complexity of data exploitation tools, as well as the expense of tool creation, are significantly rising as a result of the proliferation of operating systems and file formats. Cases used to be restricted to the examination of a single device, but now they frequently call for the investigation of several devices.

Digital forensic tools needs advancement in order to combat these threats. The tools will need to be automated in order to handle the enormous volume. The tools must have built-in analytical capabilities in addition to data recovery capabilities so that significant items can be discovered without having to view every item. The tools must be semiotic, capable of deciphering spoken and written human language, and able to interpret context and content.

Both the companies that employ digital forensic experts and the people who depend on them will need to change. The assurance that the data gathered and judgments made are trustworthy is what society needs. The cooperation and support for the interoperability of people, tools, and processes will be required. International legal rules also need to change given the problem is worldwide. These changes will lead to more evolved tools and techniques that will help combat the challenges.

References:

1. Garfinkel, Simson L. "Digital forensics research: The next 10 years." *digital investigation* 7 (2010): S64-S73.
2. Pollitt, Mark. "A history of digital forensics." *IFIP International Conference on Digital Forensics*. Springer, Berlin, Heidelberg, 2010.
3. Delp, Edward, Nasir Memon, and Min Wu. "Digital forensics." *IEEE Signal Processing Magazine* 26, no. 2 (2009): 14-15.

Sanjana J Bharadwaj
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4th Semester

Giant Investment Scam Network Targets Victims with Phone Calls



Security experts have found a huge investment fraud scheme that targets people in Europe by phone and online.

The “gigantic network infrastructure” seen by Group-IB covers over 10,000 EOS in websites localised for users in the UK, Belgium, the Netherlands, Germany, Poland, Portugal, Norway, Sweden and the Czech Republic.

Victims are first deceived by posts about fake investment schemes, social media accounts such as Facebook and YouTube. Often, images of local or global celebrities are used to make the scam seen more authorised. Clicking on

the post will take them to a fake broker website, which will have a high quality design.

The group IB- explained that how the scam network target the victim. Once the victim lands on the fake broker website, they will see various fake messages of people that have had successful trades and are in the process of cashing out. For example a random person from your city just has withdrew a couple of hundred euros. The victim will then be required to fill out a contact form. Once they do, they will receive a call from a scammer impersonating a broker.

After filling out the form, the victim receives a call from scammers who provide a link to the final fraudulent investment project with a personal account. To start trading, the victim needs to restore the balance”. Once they make the card payment, they will get a login to a fake investment dashboard.

In the fake dashboard profit will be shown, while literally there is no profit as everything is fake. The scammers do this to be able to ask the victim for more money, as the victim believes that good profits are being made. No actual trading is taking place on the platform.

However, if the victim decides not to deposit any more money and wants to cash out, they will have to put more money in to meet a 'pay out threshold'. Even if they do this, they will be asked for more money.

Reference :

<https://www.infosecurity-magazine.com/digital-forensics/>

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4th Semester

Database Forensics

Database forensics is a subfield of digital forensic science concerned with the forensic examination of databases and their metadata. It is the process of using electronic data stored in a database to put together clues, find the crime and solve the case.

The following scenarios would necessitate the intervention of a database forensic specialist:

- Failure of a database
- Deletion of information from database
- Inconsistencies in the data of a database
- Detection of suspicious behaviour of users

A database forensics expert will normally use a read-only method or an identical forensic copy of the data when interacting with a database to ensure that no data is compromised. They will run a series of diagnostic tools to help them to:

- Create a forensic copy of a database for analysis. Reconstruct missing data and/or log files associated with the deletion.
- Decipher data and determine potential causes of corruption.
- Audit user activities and isolate suspicious and illegal behaviour.

This helps an investigator gain the information that the affected party requires, and can aid in the investigation and prosecution of the perpetrators if criminal proceedings are initiated against guilty parties.

- Database Systems Used in Forensics
- Oracle (Relational Database Management System)
- MySQL (Relational Database Management System)
- Microsoft SQL Server (Relational Database Management System)
- PostgreSQL (Relational Database Management System)
- MongoDB (Document stores)

Reference:

<https://resources.infosecinstitute.com/topic/computer-forensics-overview-types-databaseforensics/>

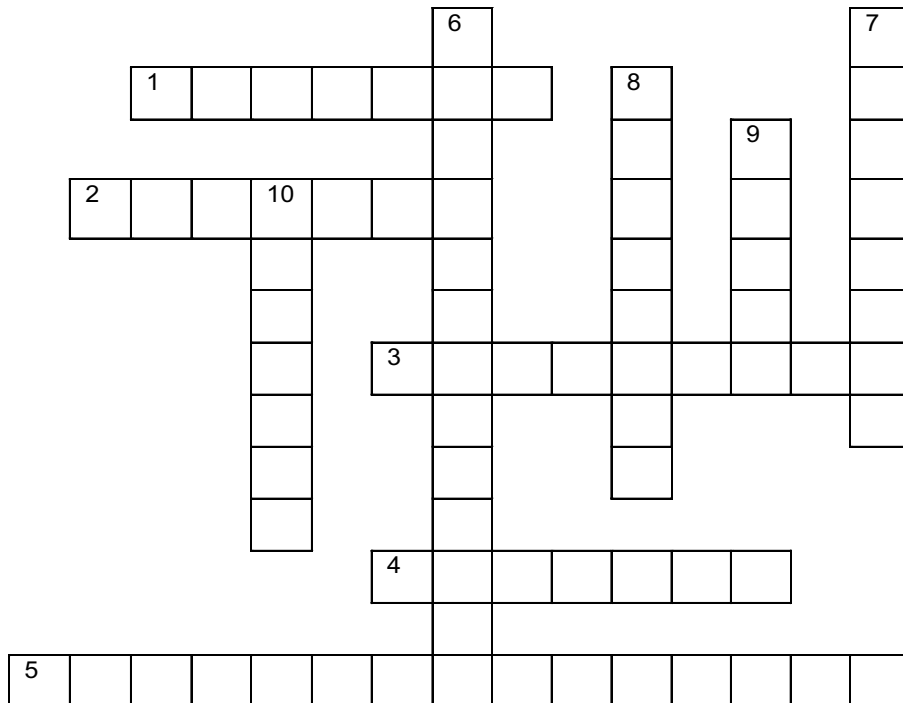
Sanjay. H
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4th Semester

Do you Know?



- Deleted computer files can be recovered even after a hard drive is reformatted or repartitioned.
- Forensic analysis can reveal what web sites have been visited and what files have been downloaded.
- Forensic analysis can reveal deleted e-mail even if a web based e-mail server was used.
- Forensic analysis can reveal attempts to fabricate or hide evidence.

Crossword Puzzle



Answers

10	Malware
8	Trojan
8	Phishing
7	Hardware
9	Encryption code
2	Digital evidence
4	Cookies
3	Backlog
5	Spillages
1	Hacking

Across

1. The act of intruding another's digital information for personal gain.
2. Illegally collects data from credit, debit, or ATM cards.
3. Dennis Rader AKA the _____.
4. Files placed on a computer from a visited website
5. Any info of value stored or transmitted in digital form

Down

6. A code that cannot be read without decoding it
7. The physical components that make up a computer system.
8. Attempt to obtain sensitive info by disguising as a trustworthy entity.
9. Every time you use a computer you leave a digital _____.
10. Software intended to damage a device

Shrayanth S
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4th Semester

Events Details

1. Student Development Programme on Data Science

The Data Science Student Development Program was held for 6th semester students from April 11 to 19 April 2022.

The Resource person Mr Kiran Raj, Senior Manager and Researcher, SeaportAi, Bangalore, focused his talk on tools used for deep learning, classification, clustering regression theory, supervised learning, Decision tree and KNN algorithms, and Natural Language Processing.



The resource person addressing the students of 6th semester

2. Technical Seminar on Full Stack Development and HR Workshop

A Technical seminar on Full Stack Development and an HR workshop was conducted under IE (Institution of Engineers) student chapter on 20 May 2022. The resource persons were from M/s Betsol focused on Heroku, ReactJS, PostgreSQL, Flask and application deployment on cloud. They also guided the students regarding the ethics to be followed in an interview, the dress code and the work culture of the IT industry.



Seminar on Full stack development

3. Industrial Visit to Excon Exhibition

The students of 4th Sem ISE were taken to EXCON at BIEC on Friday 20th May 2022 as a part of Industrial Visit to learn about the Artificial Intelligence, Robotics and Automation Process in an industry under the Indian Society of Technical Education (ISTE) Student Chapter. Students had an opportunity to interact with different companies and learn about the lifecycle of product development, importance of innovativeness, the financial and marketing phase of product development. Students had an insight to the best practices of the industry involving design and manufacture to make smarter products .



The students of 4th Semester along with the faculty members at EXCON

Achievements of Students

1. **Shanthi Swaroopa H P, Mohammed Fiquar** Published a paper entitled “Visualizing and Forecasting Stocks using Machine Learning” with International Research journal of Engineering and Technology, Volume 9 Issue 6, June 2022.
2. **Pratheek G Aithal** Published a paper entitled “Automating Traffic Lights using Deep Learning” with International Journal for Recent Trends and Innovation, Volume 7 Issue 6, June 2022.
3. **Jinendra Anchalia** published a paper entitled “Building CNN Model for Autonomous Car using Udacity Simulator” with Recent Trends in Computer Graphics and Multimedia Technology, Volume 4 Issue 1, June 2022.
4. **Vaishnavi Y Nayak** of VI semester participated in Mindtree's Ideation Contest 2022-Finale-Team Presentation L2 organised by Mindtree on 12th March 2022.
5. **Sarvath Anjum** of VI semester completed Internship on Web Development at Exposys Data Labs.
6. **Sneha P** of IV semester completed Microsoft certification on Knowledge Solutions India
7. **Anirudha U N** of VI semester has won Gold medal in Indian group song, Silver Medal in One Act Play and Bronze medal in Western group song at 21st Inter-collegiate VTU Youth Festival- Prathibhotsava held at BMSCE from 29th July 2022 to 31st July 2022.
8. **Sushmita S** of VI semester has won Silver medal in One Act Play at 21st Inter-collegiate VTU Youth Festival- Prathibhotsava held at BMSCE from 29th July 2022 to 31st July 2022.
9. **Sachin P** of VIII semester successfully completed internship with SMITAM, Non profit organization and received the Volunteer certificate.
10. **Anu Jagadeesh** of IV semester secured second place in Throwball in Inter collegiate Zonal Tournament held at The Oxford college of Engineering from 6th June 2022 to 7th June 2022.

Achievements of Staff

1. **Dr. S Srividhya** published a book chapter titled “3D Terrain Mapping and Object Detection Using LiDAR” in Communications, Signal Processing, and Systems. CSPS 2021. Lecture Notes in Electrical Engineering.
2. **Dr. S Srividhya** and team filed a patent titled “ IOT and Wireless based intelligent E-vehicle with self-power generating optimal power management” on 24/10/2021.
3. **Dr. S Srividhya** and team filed a patent titled “IOT based enhanced hybrid mobile mesh ADOV wireless network for Rebroadcasting of data packets” on 08/09/2021.
4. **Prof. Laxmi V** published a paper titled mobile mesh ADOV wireless network for Rebroadcasting of data “Machine Learning based Prediction Model for Consumability Analysis of Mango Fruits” in International Journal for Modern Trends in Science and Technology June 2022.
5. **Manjunath G S** published a paper titled “Novel and Low Cost Air Pollution Prediction Using IOT and Machine Learning” in DICKENSIAN journal.
6. **Manjunath G S** published a paper titled “ Automated Attendance Management System For Educational Institution” in DICKENSIAN journal.

Editorial Team

Students

- **Harshitha S Kanala**, VI Sem
- **Sayan Manna**, VI Sem
- **Sanjana J Bharadwaj**, IV Sem
- **Soujanya S**, IV Sem

Faculty

- **Ms. Rashmi T V** - Assistant Professor
- **Ms. Sudeshna Pandey** - Assistant Professor ,English

Layout & Design

- **Sri. Anand P M** - System Manager