REPORT ON 2-DAY NATIONAL CONFERENCE ON "NEW AGE FORENSICS: UNVEILING MYSTERIES IN THE DIGITAL ERA"

In an era defined by rapid technological advancements, the field of forensic science has undergone a profound transformation. The "New Age Forensics: Unveiling Mysteries in the Digital Era" conference is a dynamic and comprehensive event that delves into the cutting-edge developments, challenges, and opportunities in forensic science, with a particular focus on emerging fields such as Deep Fake Forensics, Cloud Forensics, Insurance Forensics and DNA Forensics.

This conference aims to bring together a diverse community of experts, researchers, practitioners, and enthusiasts from various forensic disciplines, including digital forensics, criminal justice, law enforcement, and academia. By providing a platform for collaboration and knowledge exchange, this event seeks to advance the field and equip attendees with the tools and insights they need to navigate the complex landscape of digital-era crime-solving.

Guest Speakers:

Prof. (Dr.) K. Jaishankar:
Founder/Principal Director,
International Institute of Justice & Police Science (IIJPS),
Bengaluru, Karnataka.

Dr. Madhusudan Reddy Nandineni:
Scientist & Group Leader,
Centre for DNA fingerprinting & Diagnostics (CDFD),
Hyderabad.

Dr. Melita Luke:
Associate Professor,
CMR University, Bangalore.

Dr. Rajesh Kumar:
Head – Dept. of Forensic Science,
GIFS, Aurangabad

Dr. Ranjeet Singh:
Director,
Sherlock Institute of Forensic Science,
New Delhi.

DAY – 1

Inaugural Session:
The sequence of events during the Inaugural Session is as follows:

•**Lighting of the Lamp & Prayer Song**: Mrs. Sudha Rani initiated the event with the traditional lighting of the lamp, symbolizing the dispelling of darkness, followed by a soulful prayer song.

•**Logo Unveiling by Dignitaries**: The dignitaries present unveiled the official logo of the event, symbolizing unity and the spirit of the occasion.

•**President Address**: Shri. Dr. N. Sesha Reddy, the esteemed Chairman of Aditya Educational Institutions, addressed the gathering, providing valuable insights and setting the tone for the conference.

•**Principal Address**: Shri. Vilas Anil Chavan, the Principal of Aditya Degree & PG College, Surampalem, delivered a thoughtful address, emphasizing the significance of the event.
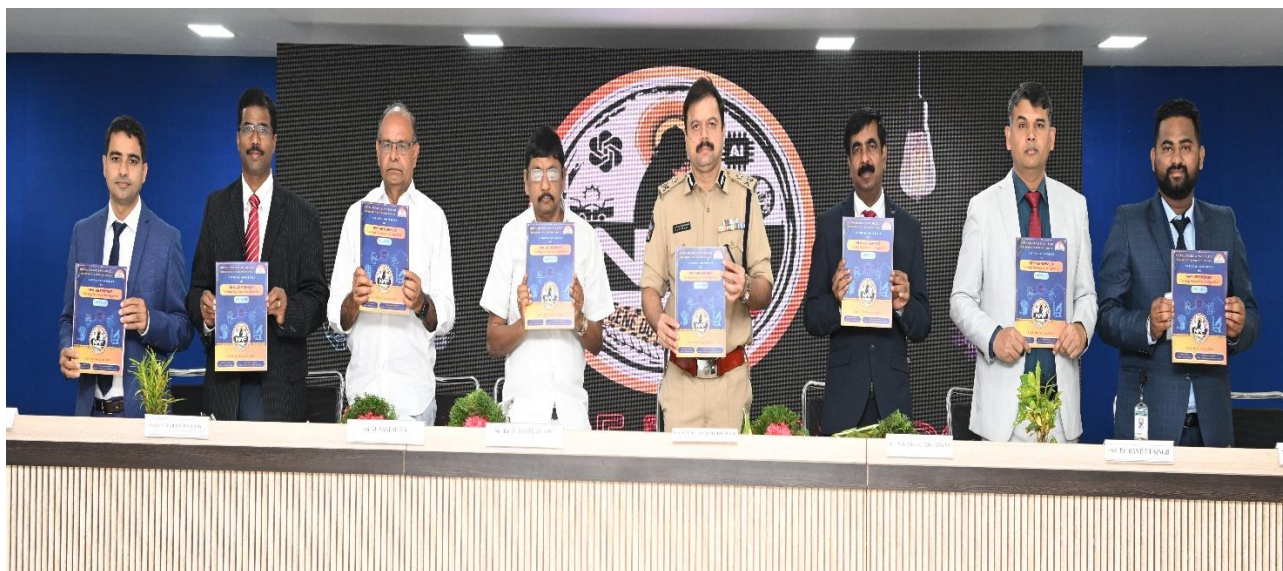

•**Guest of Honour:** Shri. M. Nagi Reddy, Retd General Manager of Reliance Industries Ltd., graced the occasion as the Guest of Honour, sharing his valuable experiences and insights.

•**Chief Guest Address:** The Chief Guest, Sri. G.V.G. Ashok Kumar, Inspector General of Police, Eluru Range, Andhra Pradesh, delivered a keynote address, highlighting the relevance of the conference theme.

• **Conference Proceeding Book Launch by Dignitaries:** The dignitaries jointly launched the conference proceeding book, symbolizing the commencement of the academic sessions.

• **Memento Presentation to the Guests**: As a token of appreciation, mementos were presented to the esteemed guests in recognition of their valuable contributions to the event.

Session I

Guest Introduction by Ms. E. Adithi, HOD (Forensic Science)
Keynote Talk: **"New Age Forensics: Unveiling Mysteries in the Digital Era" by Prof. (Dr.) K. Jaishankar, Founder/Principal Director, International Institute of Justice & Police Sciences (IIJPS), Bengaluru, Karnataka.**

The Speaker started the session by describing the Nature of crimes that happen in different spaces such as cyberspace and the physical world. The various features of crimes and their growth potential, when they occur in cyberspace, were also discussed. The Anonymity of offenders in cyberspace is a major challenge for the Criminal justice system in investigating such cybercrimes. The speaker further covered the History and development of the Internet over the years starting from the invention of ARPANET to the current scenario. The evolution of social media through the years and the level of its awareness to the public was also covered. Overview and Applications of social media, their usability in different devices and services provided were discussed. The speaker discussed the statistics on the daily time spent for usage of the Internet among the public, the top websites visited and apps used by the public. These data can provide data on the psychology of the public using the internet. The speaker then talked about Cybercrimes, the dynamic nature of their definitions, and the attacks that occur by the use of the internet. Cybercrime was also defined from the victimization perspective. The classification of cybercrimes, the current perception of cybercrime by government and scholars. Cyber criminology, a radical discipline that involves the study of criminals committing cybercrimes was introduced.

The Space Transition Theory postulates that individuals behave differently when they are put in different spaces. This theory which was proposed by the speaker was cited 200 times in the research and literature. Cyber victim counselling and its contribution and impact on the society were also discussed. The Irrational Coping Theory of cyber victimization was explained. The speaker then explained that the emergence of the digital era has brought forth unprecedented challenges and opportunities in the field of forensics. The field of Digital forensics, its evolution, understanding of the field, its role in criminal investigation, the emerging technologies in Digital forensics, and Legal and ethical considerations put forth in the IT Act were covered. The Future aspects of Digital forensics and the increased collaboration with the private sector were also discussed. The speaker then talked about Artificial Intelligence and its ethical considerations, recommendations such as Investments in Training and Education and the support for research and

innovation. The speaker then concluded by encouraging the participants to expand their knowledge and skills in the digital era.
•Q & A session
•Rapporteur: Mr. BVSS Udaynadh, Lecturer

Session II
Guest Introduction by Mr. Deepak Kumar, HOD (Cyber Forensics).

Plenary Session 01: "Unmasking Falsehoods: Advancements in Deepfake Forensics for Safeguarding Truth in the Digital Age" by Dr. Rajesh Kumar, Head, Department of Forensic Science, GIFS Aurangabad.

The 2- day National Conference on NEW AGE FORENSICS, held at Ratan Tata Bhavan on day 2, commenced at 12:15 pm were Dr. Rajesh Kumar, Head of the Department of Forensics at GIFS, Aurangabad, delivered a compelling presentation titled "Unmasking Falsehoods: Advancements in Deepfake Forensics for Safeguarding Truth in the Digital Age."

Dr. Kumar's discourse explored the intricate domain of Deepfake Forensics, delving into the origin and progression of deepfake technology. The session encompassed a comprehensive understanding of the methods involved in deepfake creation, touching upon legal considerations such as financial frauds, social engineering, and the generation of pornographic content through swapping. Real-life cases related to deepfakes were highlighted, shedding light on the criminal landscape associated with this technology. The presentation further distinguished between shallow fakes and deepfakes, elucidating methods of creating fake images, including cloning, splicing, resampling, and morphing. A detailed examination of the two-phase process involved in deepfake creation, incorporating training and generation, was provided. Dr. Kumar emphasized the role of deep learning and machine learning in identifying deepfakes. Detection techniques were discussed, ranging from reverse image searches and metadata analysis to image analysis. The session also delved into the complexities of creating deepfake videos, exploring inter-frame forgery and intra-frame forgery techniques. The section concluded that Legal provisions related to deepfakes were thoroughly examined, emphasizing the need for regulatory measures to address potential misuse.

•Q & A session
•Rapporteur: Ms. Gowri Priya, Assistant Professor
•Memento Presentation to the Guest

Session III

Guest Introduction by Ms. Ariya P., Lecturer
Plenary Session 02: **"Unveiling the Intricacies: Navigating the Landscape of Insurance Forensics for a Resilient Future" by Dr. Ranjeet Singh, Director, Sherlock Institute of Forensic Science, New Delhi.**

The program commenced with the welcoming of the Guest speaker Dr. Ranjeeth Singh, Director, Sherlock Institute of Forensic Science, New Delhi and Ms. Ariya P, Lecturer of Forensic Science introduced the guest.
The lecture commenced at 2.15 p.m. by Dr. Ranjeeth Singh on "Unveiling the intricacies: Navigating the landscape of Insurance Forensics for a resilient future". The plenary session delved into the complex field of insurance forensics with the goal of strengthening the sector for future resilience.
The following were the main points:
•Insurance Forensics Overview
•Causes of Fraud in Indian Insurance
•Elements and Triggers of Insurance Fraud

•Role of Certified Fraud Examiners
•Fraud Detection Methods
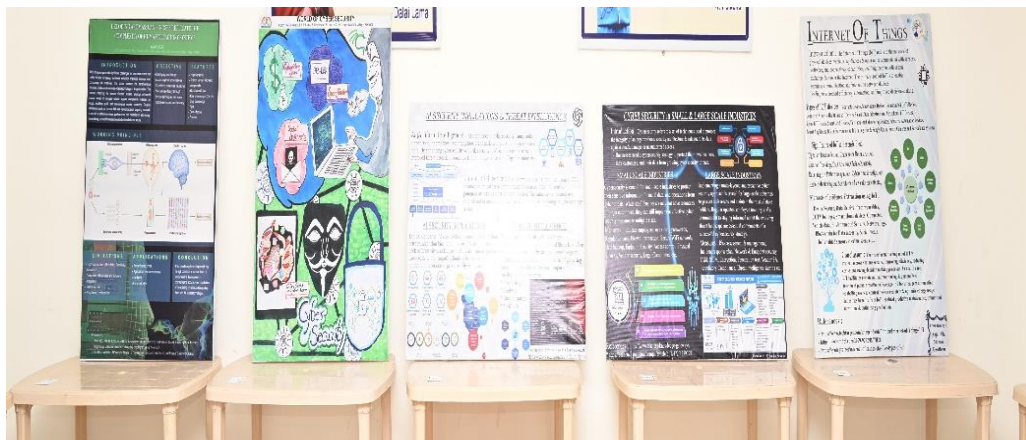•Challenges and Forensic Services
The session extensively covered the nuances of insurance forensics, emphasising proactive measures, sophisticated methodologies, and the critical role of experts in safeguarding the industry against fraudulent activities.
•Q & A session
•Rapporteur: Ms. Ch. Chandini, Lecturer

Poster Presentations - Venue: Auditorium, Cotton Bhavan
•Inauguration by the dignitaries
•Examiners: Prof. (Dr.) K. Jaishankar, Dr. Rajesh Kumar, Dr. Ranjeet Singh, Dr. Madhusudan Reddy Nandineni, and Dr. Uma Maheswara Rao.

• <u>Cultural Event – Venue: Seminar Hall, Pharmacy I</u>

The event took place in the seminar hall located within the Pharmacy I college block and showcased a diverse array of performances, featuring nine distinct acts that included cultural dances representing the state of Andhra Pradesh, other fusion dance performances, melodious songs, and an outstanding on-spot singing performance by an external student from RRU, Puducherry.
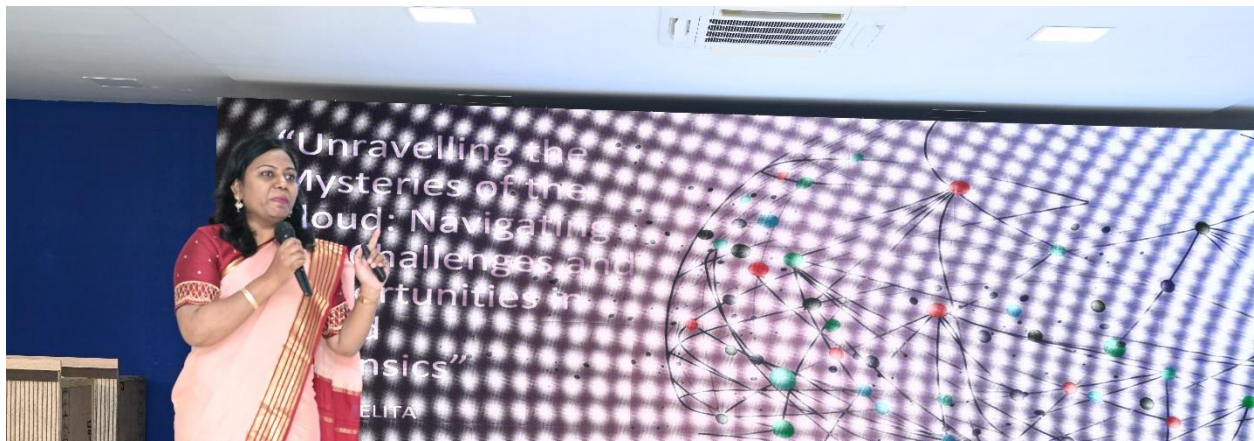
Programme Schedule of Sessions - Day 2 (9th January 2024)

Session I
Guest Introduction by Ms. Sanjana Thanjan Shaju, Assistant Professor.
 Plenary Session 03: "Cloud Forensics Unveiled: Analytical Approaches and Emerging Trends" by Dr. Melita Luke, Associate Professor, CMR University, Bangalore.

The Aditya Degree & PG College, Surampalem was honoured to host Dr. Melita Luke, a renowned expert in cloud technology and in cyber security, for an enlightening guest lecture on "Unraveling the Mysteries of the Cloud: Navigating the Challenges and Opportunities in Cloud Forensic." The lecture aimed to provide students and professionals with a comprehensive understanding of cloud computing, its fundamentals, various types, usage, and the associated challenges in the realm of forensic investigation.

Dr. Melita Luke initiated the lecture by providing a clear and concise overview of the fundamentals of cloud computing. She elucidated on the definition of cloud computing, its key characteristics, and the various types of cloud services, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Additionally, she highlighted the significance of cloud architecture in facilitating seamless and scalable services.

Dr. Luke delved into the darker side of cloud computing by discussing the major cyberattacks prevalent in the cloud environment. She shed light on the unique challenges posed by cloud technology, emphasizing the need for robust security measures to protect sensitive data and infrastructure. The lecture underscored the importance of understanding potential threats to effectively navigate the complexities of cloud security.

The focal point of the lecture was cloud forensic investigation. Dr. Luke explained the concept of cloud forensic and its pivotal role in uncovering and mitigating cyberattacks. She outlined the step-by-step process involved in investigating incidents within the cloud environment, emphasizing the importance of real-time monitoring, log analysis, and evidence preservation. Dr. Luke also shared insights into the various tools employed in cloud forensic investigations, providing attendees with valuable knowledge on how to proactively address security breaches.

The lecture concluded with an engaging question and answer session where Dr. Melita Luke patiently addressed queries from the audience. Students and professionals had the opportunity to seek clarification

on topics ranging from specific forensic tools to emerging trends in cloud security. Dr. Luke's responses showcased her depth of expertise and her commitment to fostering understanding among the participants. Q & A session.
Rapporteur: Mr. V. Ameesh, Assistant Professor.

Session II
 Guest Introduction by Ms. Varshini H, Assistant Professor, introduced the session.

Plenary Session 04: **"Unveiling Genetic Identities: Exploring Advances in DNA Fingerprinting for Forensic and National Security Applications" by Dr. Madhusudan Reddy Nandineni, Scientist & Group Head, Centre for DNA Fingerprinting & Diagnostics (CDFD), Hyderabad.**

Dr. Madhusudan Reddy delivered an insightful lecture on the topic "Unveiling Genetic Identities: Advances in Forensic DNA Profiling." The lecture covered a range of topics, including the properties of DNA, forensic human DNA profiling, case studies, the benefits of DNA databanks and advancements in DNA technology.
Dr. Reddy began the lecture by providing a comprehensive overview of the fundamental properties of DNA (Deoxyribonucleic Acid). He explained its role as the genetic code that carries hereditary information. Understanding these properties is crucial for unlocking the potential of DNA in forensic investigations. The lecture delved into the intricacies of forensic human DNA profiling, elucidating the techniques and methodologies employed in identifying individuals based on their DNA. Dr. Reddy discussed the importance of DNA profiling in criminal investigations, paternity testing, and establishing familial relationships. The lecture highlighted the accuracy and reliability of DNA profiling in forensic scenarios.
Dr. Reddy presented compelling case studies that showcased the real-world applications of forensic DNA profiling. These cases demonstrated how DNA evidence played a pivotal role in solving crimes, exonerating innocent individuals, and establishing guilt beyond a reasonable doubt. Cases from NIA, Plane crash incident of Mangalore were discussed. The lecture emphasized the significance of DNA technology in delivering justice and ensuring the integrity of legal proceedings. The discussion shifted towards the

benefits of maintaining DNA databanks. Dr. Reddy elaborated on how these databanks facilitate the storage and retrieval of DNA profiles, aiding law enforcement agencies in criminal investigations. The lecture underscored the potential for preventing and solving crimes through the systematic cataloging of DNA data. The lecture concluded with an exploration of the latest advancements in DNA technology. Dr. Reddy highlighted emerging techniques such as Next-Generation Sequencing (NGS) and advanced forensic DNA analysis methods. These technological advancements were presented as instrumental in enhancing the accuracy, speed, and efficiency of DNA profiling in forensic investigations.

Dr. Madhusudan Reddy's lecture on "Unveiling Genetic Identities: Advances in Forensic DNA Profiling" provided a comprehensive and engaging overview of the properties of DNA, forensic human DNA profiling, case studies, the benefits of DNA databanks, the Chester Turner case, and advancements in DNA technology. The audience gained valuable insights into the pivotal role of DNA profiling in modern forensic science and its contribution to criminal justice. He cleared the doubts of participants and ended the session. Q & A session

Rapporteur: Ms. Blessy B., Assistant Professor.

Paper Presentation:

1. Number of Papers: A total of 17 papers were submitted, each representing unique research and insights within the field of forensics.

2. Presentation Time: Presenters were allocated a concise time of 5 minutes to present their papers. This ensured a focused and efficient delivery of key information.

3. Question and Answer Session: Following each presentation, examiners engaged presenters in a question-and-answer session lasting approximately 2 minutes. This allowed for deeper exploration of the research and provided an opportunity for students to showcase their understanding and critical thinking.

Paper Presentations (Session-01) - Auditorium, Ratan Tata Bhavan:

Participants from 01-08:

A series of paper presentations were conducted with participants from 01 to 08.

Examiners: The panel of examiners included Dr. Rajesh Kumar, Dr. Madhusudan Reddy Nandineni, Dr. Uma Maheswara Rao, and Dr. Melita Luke.

Paper Presentations (Session-02) - Auditorium, Ratan Tata Bhavan:

Participants from 09-17:

Another set of paper presentations were held with participants from 09 to 17.

Examiners: The same distinguished panel of examiners evaluated the second set of presentations.

Panel Discussion with the Guests - Auditorium, Ratan Tata Bhavan:
Dignitaries: Mr. Vilas Anil Chavan, Dr. Madhusudan Reddy Nandineni, Dr. Melita Luke, Dr. Rajesh Kumar, Dr. Uma Maheswara Rao.
The panel discussion enriched the conference with diverse perspectives and insights from esteemed dignitaries.

• **Valedictory Function:**

Venue: Auditorium, Ratan Tata Bhavan, with the following agenda:

1. **Welcome:** The event commenced with a warm welcome extended to all attendees.

2. **President's Address:** Shri. Dr. N. Sesha Reddy, Chairman of Aditya Educational Institutions, delivered the President's Address, providing insights and closing remarks for the conference.

3. **Principal's Address**: Shri. Vilas Anil Chavan, Principal of Aditya Degree & PG College, Surampalem, delivered the Principal's Address, sharing valuable perspectives on the conference themes.

4**. Guest of Honor Address**: Shri. Boyanapalli Radha Krishna, a Civil & Criminal Advocate, Panel Advocate for Union Bank of India & BSNL, delivered an address as the Guest of Honor, contributing legal insights to the audience.

5. **Speech by the Guest Speakers:** Dr. Rajesh Kumar, Dr. Madhusudan Reddy Nandineni, Dr. Melita Luke.

6. **Prize Distribution**: Announcement by Ms. Blessy B., Assistant Professor.
The prizes for the best poster and presentation were:
Poster Presentation: 1st Prize – 5,000 rupees, 2nd Prize – 3,000 rupees.
Paper Presentation: 1st Prize – 5,000 rupees, 2nd Prize – 3,000 rupees.

Prizes for Poster and Paper Presentation:

Poster Presentation Overview:
1. Number of Posters: A total of 28 posters were submitted, each representing unique research and insights within the field of forensics.
2. Presentation Time: Presenters were allocated a concise time of 3 minutes to present their posters. This ensured a focused and efficient delivery of key information.
3. Question and Answer Session: Following each presentation, examiners engaged presenters in a question-and-answer session lasting approximately 2 minutes. This allowed for a deeper exploration of the research and provided an opportunity for students to showcase their understanding and critical thinking.

Poster Presentation Overview:

1. Number of Papers: A total of 28 papers were submitted, each representing unique research and insights within the field of forensics.
2. Presentation Time: Presenters were allocated a concise time of 5 minutes to present their papers. This ensured a focused and efficient delivery of key information.
3. Question and Answer Session: Following each presentation, examiners engaged presenters in a question-and-answer session lasting approximately 2 minutes. This allowed for a deeper exploration of the research and provided an opportunity for students to showcase their understanding and critical thinking.

Poster Presentation Winners:
1st Prize – N. Devi, P. Niharika, Yamini Preethi (1st M.Sc. Forensic Science, Dept. of Forensic Science, Aditya Degree and PG College, Surampalem).

2nd Prize – Jalem Amoogh Sriram Preethi (2nd M.Sc. Forensic Science, Dept. of Forensic Science, Aditya Degree and PG College, Surampalem) and B. Praveen Kumar Preethi (2nd B.Sc. Forensic Science, Dept. of Forensic Science, Aditya Degree and PG College, Surampalem)

Paper Presentation Winners:

1st Prize – Nithin S. (Asst. Professor, Srinivas University, Mangalore, Karnataka)

2nd Prize – Nayana T. (Asst. Professor, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu).

7. Memento Presentation to the Guests:
The distinguished guests were honored with mementos as tokens of appreciation for their valuable contributions.

8. **Vote of Thanks**: Mr. B.K. Vidyasagar delivered the Vote of Thanks, expressing gratitude to all participants, organizers, and contributors.

9. **National Anthem**: The Valedictory Function concluded with the rendition of the National Anthem, symbolizing unity and pride.