# CYBER COURIER

## ANNUAL MAGAZINE

MARCH|2023-24

## Your Fast-Track to the Latest in Tech Innovations and Cyber Trends

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**BABURAJAN T.S.**

PRINCIPAL,
SREERAMA GOVT. POLYTECHNIC COLLEGE

Dear Students, Faculty, and Readers,

It is my great pleasure to introduce this latest edition of the "Cyber Courier," our esteemed college magazine dedicated to the fascinating and ever-evolving world of cybersecurity. As we navigate through the complexities of the digital age, the importance of cybersecurity has never been more pronounced. This magazine serves not only as a source of information but also as a platform for discussion, innovation, and learning.

Our college has always been at the forefront of embracing technological advancements and integrating them into our curriculum. The field of cybersecurity, in particular, stands out as a critical area that demands our attention and expertise. As we witness an increasing number of cyber threats and data breaches, it becomes imperative for us to equip ourselves with the knowledge and skills to protect our digital assets and ensure the safety of our information systems.

I would like to extend my heartfelt thanks to the editorial team, contributors, and everyone involved in bringing this magazine to life. Your efforts have created a valuable resource that will benefit our college community and beyond. Let us continue to strive for excellence, innovation, and security in all our digital endeavors.
Happy reading!

Warm regards,


Principal,
Sreerama Govt. Polytechnic College, Triprayar

# HOD's Message

## SHEJIN T R

HEAD OF THE DEPARTMENT,
SREERAMA GOVT. POLYTECHNIC COLLEGE

Dear Students, Faculty, and Readers,

It gives me immense pleasure to present to you the latest edition of "Cyber Courier," our dedicated magazine that delves into the fascinating and critical realm of cybersecurity. As the Head of the Computer Science Department, I am proud to see the collective efforts and dedication that have gone into making this publication a reality.

This edition of "Cyber Courier" is packed with insightful articles, expert interviews, and practical guides that cover a wide spectrum of topics within cybersecurity. From exploring the latest in threat intelligence and defensive strategies to understanding the ethical implications of cybersecurity practices, our contributors have worked tirelessly to provide content that is both informative and thought-provoking.

I am particularly excited about the contributions from our students and faculty, who have shared their research findings, innovative projects, and personal experiences in cybersecurity. Their work not only highlights the talent and expertise within our department but also serves as an inspiration for others to pursue excellence in this vital field.

As you read through this magazine, I encourage you to engage deeply with the content, reflect on the insights provided, and think critically about the role each of us plays in maintaining and enhancing cybersecurity. Whether you are a student, educator, or industry professional, there is something in these pages for everyone.

In closing, I would like to extend my heartfelt thanks to the editorial team, the contributors, and all those who have supported this endeavor. Your hard work and dedication have made "Cyber Courier" a valuable resource for our community.

Happy reading and stay secure!
Warm regards,

SHEJIN T R
Head of Department
Computer Engineering
[College Name]

# EDITOR'S NOTE

## SREEJA M K

### CHIEF EDITOR, CYBER COURIER

Dear Readers,

Welcome to the latest edition of "Cyber Courier," our college magazine dedicated to the vibrant and rapidly evolving field of cybersecurity. It is with great excitement and pride that we present this issue, which encapsulates the collective efforts, insights, and innovations of our talented students, faculty, and industry experts.

One of the highlights of this edition is our feature on "The Future of Cybersecurity," where experts share their visions and predictions for the next decade. Additionally, our in-depth analyses on Zero Trust Architecture and ransomware offer practical strategies and solutions to enhance your security posture. We have also included hands-on guides for setting up your own cybersecurity lab and conducting penetration tests, ensuring that you have the tools to put theory into practice.

I would like to extend my sincere gratitude to everyone who contributed to this issue. Your passion, dedication, and expertise are the driving forces behind "Cyber Courier." To our readers, thank you for your continued support and engagement. We hope this magazine not only informs but also inspires you to delve deeper into the world of cybersecurity.

Happy reading and stay secure!

Sincerely,
SREEJA M K
Editor-in-Chief
Cyber Courier Magazine
Sreerama Govt. Polytechnic College triprayar

# DEPARTMENT OF COMPUTER ENGINEERING

BABURAJAN T.S.

SHEJIN T R

SREEJA M K

SANTHOSH K M

NEENA M K

INDU V KUMAR

SINDHU P S

MANESH K G

ASMABEEVI E K

JOSEPH O T

PRADEEP P G

ANIL KUMAR T P

# CLOUD SECURITY

Cloud security is a collection of procedures and technology designed to address external and internal threats to business security. Organizations need cloud security as they move toward their digital transformation strategy and incorporate cloud-based tools and services as part of their infrastructure.The terms digital transformation and cloud migration have been used regularly in enterprise settings over recent years. While both phrases can mean different things to different organizations, each is driven by a common denominator: the need for change.

As enterprises embrace these concepts and move toward optimizing their operational approach, new challenges arise when balancing productivity levels and security. While more modern technologies help organizations advance capabilities outside the confines of on-premises infrastructure, transitioning primarily to cloud-based environments can have several implications if not done securely.Striking the right balance requires an understanding of how modern-day enterprises can benefit from the use of interconnected cloud technologies while deploying the best cloud security practices.

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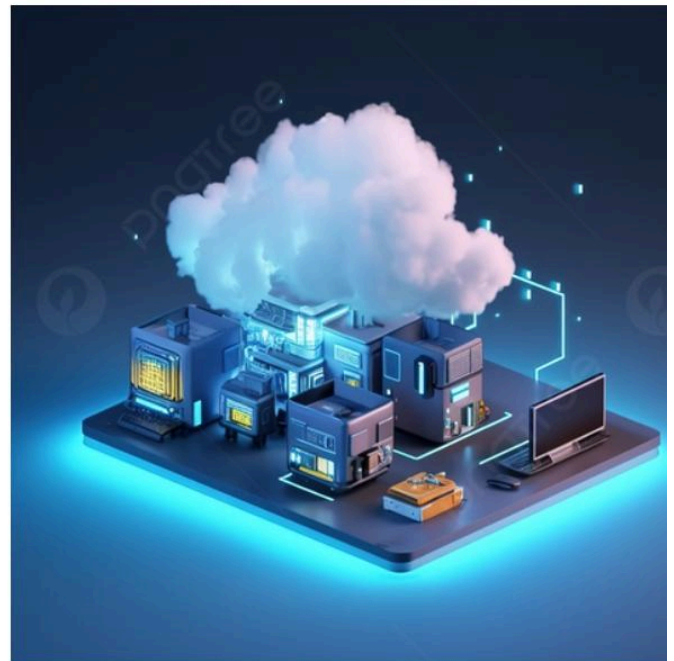
# CYBER SECURITY

## THE PILLAR OF DIGITAL TRUST

**SALINI SARATH**

**S6 CT**

## Key Components

Data Protection:

Access Control:

Threat Detection and Response:

Compliance and Governance:

## The Evolving Threat Landscape

In an era where digital transformation is at the forefront of business strategies, cybersecurity has emerged as a critical component for ensuring the integrity, confidentiality, and availability of data. As organizations increasingly rely on digital platforms to conduct their operations, the threat landscape has expanded, making cybersecurity not just a technical issue but a fundamental business priority.

Cybersecurity is an ongoing process that requires vigilance, adaptability, and a proactive approach. As threats continue to evolve, organizations must remain committed to enhancing their security measures, investing in the latest technologies, and fostering a culture of security awareness. By doing so, they can protect their digital assets, maintain customer trust, and ensure long-term success in the digital age.

# BLOCK CHAIN TECHNOLOGY

Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network.

## Why is blockchain important?

## Key elements of a blockchain

**Distributed ledger technology**
All network participants have access to the distributed ledger and its immutable record of transactions. With this shared ledger, transactions are recorded only once, eliminating the duplication of effort that's typical of traditional business networks.

**Immutable records**
No participant can change or tamper with a transaction after it's been recorded to the shared ledger. If a transaction record includes an error, a new transaction must be added to reverse the error, and both transactions are then visible.

**Smart contracts**
To speed transactions, a set of rules that are called a smart contract is stored on the blockchain and run automatically. A smart contract defines conditions for corporate bond transfers, include terms for travel insurance to be paid and much more.

**ANANTHU P S**

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## BENEFITS OF BLOCKCHAIN



Operations often waste effort on duplicate record keeping and third-party validations. Record-keeping systems can be vulnerable to fraud and cyberattacks. Limited transparency can slow data verification. And with the arrival of IoT, transaction volumes have exploded. All of this slows business, drains the bottom line, and means that we need a better way. Enter blockchain.

# HUMAN AUGMENTATION

## What is Human Augmentation?
### Will it become a megatrend in the future?

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Human augmentation is the term for technologies that improve human capabilities. They primarily work to elevate human performance, health or quality of life. Popular examples of human augmentation technology are devices such as cochlear implants or robotic limbs. However, human augmentation also applies to how humans and machines can work together, which we can see in the growing applications and capabilities of artificial intelligence (AI). By combining the strengths of automation and artificial intelligence with expert human guidance, human workers, care givers, students, public servants and professionals in virtually any kind of work can work faster and smarter.

### WHAT TECHNOLOGIES ARE USED IN HUMAN AUGMENTATION?

AI and machine learning (ML) is used to help improve human capabilities in various ways:

- What is AI analytics? Predictive AI analytics can predict trends and events that humans alone may not be able to. Virtual assistants also work to aid human workers by scheduling and setting reminders, offering insightful recommendations, and collecting and presenting relevant information. An example of this is agent assist in contact centers.
- What is agent assist? Agent assist technology provides live support for contact center agents, offering guidance, problem-solving pathways and presenting relevant information based on the issues and behaviors it detects.
- What is a chatbot? Chatbots can be used to help people find the information they need more quickly, and be presented with solutions and advice for queries and problems.

## HOW DOES HUMAN AUGMENTATION WORK?

There are three different types of human augmentation:

- Sensory. This technology is used mostly to restore abilities or compensate for impairments. Sensory augmentation is the enhancement of human senses by interpreting multisensory information.
- Action. Augmented actions focus on improving human's physical abilities. Technology advancements have allowed people to have more precise functions from their artificial limbs, with robotics playing a large role. Augmented action technology can also improve human capabilities.
- Cognitive. This looks at how computers and technology can assist the cognitive process. Augmented cognition technology aims to help improve decision-making, memory and attention.
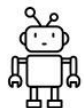
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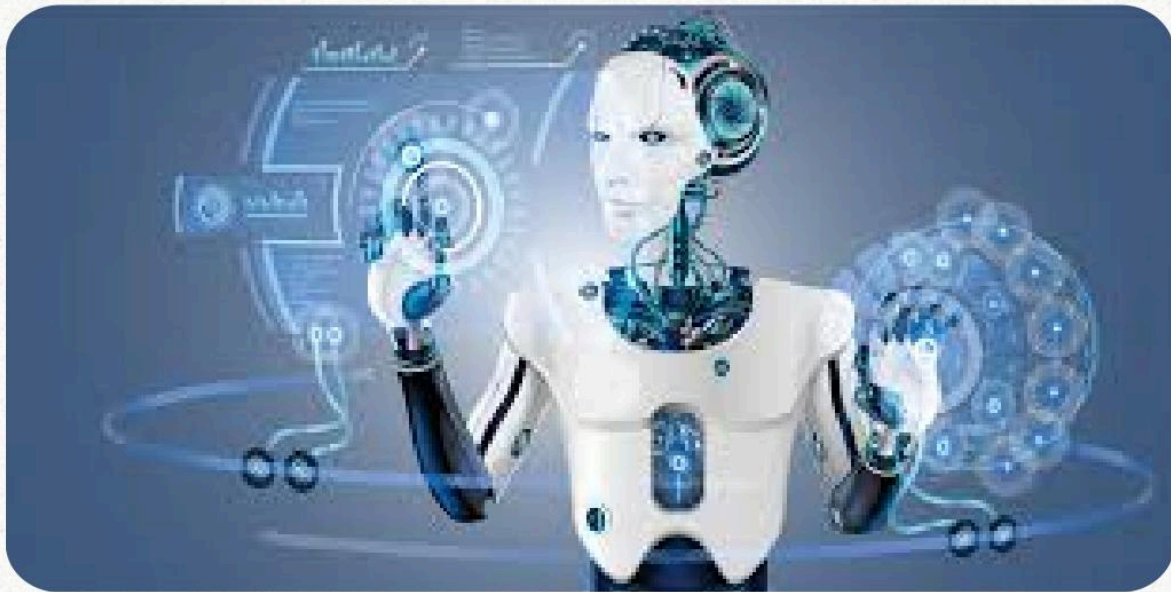
# ROBOTIC PROCESS AUTOMATION (RPA)

Robotic process automation (RPA), also known as software robotics, uses intelligent <u>automation</u> technologies to perform repetitive office tasks of human workers, such as extracting data, filling in forms, moving files and more.

RPA combines APIs and user interface (UI) interactions to integrate and perform repetitive tasks between enterprise and productivity applications.
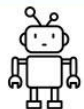
By deploying scripts which emulate human processes, RPA tools complete autonomous execution of various activities and transactions across unrelated software systems.
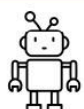
This form of automation uses rule-based software to perform business process activities at a high-volume, freeing up human resources to prioritize more complex tasks.

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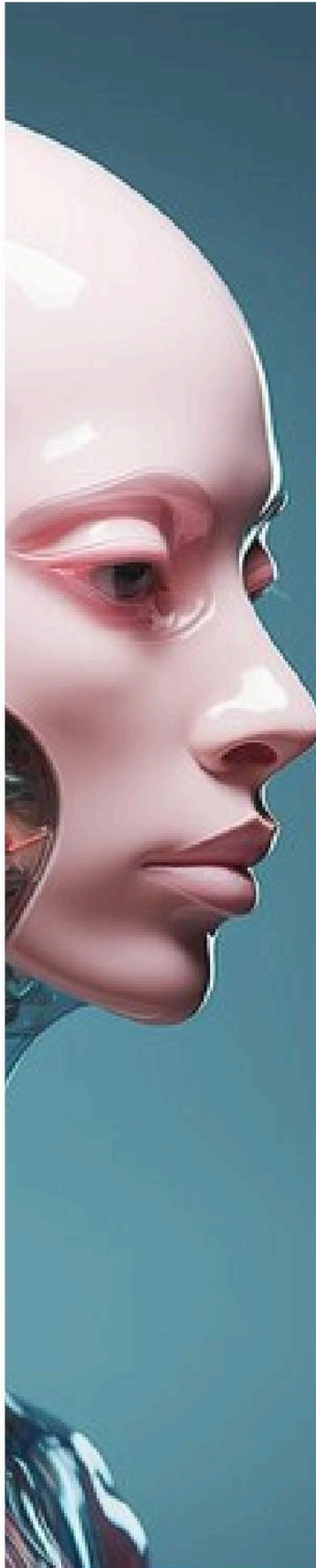**S4 CT**

## "RPA and intelligent automation"

In order for RPA tools in the marketplace to remain competitive, they will need to move beyond task automation and expand their offerings to include intelligent automation (IA). This type of automation expands on RPA functionality by incorporating sub-disciplines of artificial intelligence, like machine learning, natural language processing, and computer vision.

Intelligent process automation demands more than the simple rule-based systems of RPA. You can think of RPA as "doing" tasks, while AI and ML encompass more of the "thinking" and "learning," respectively. It trains algorithms using data so that the software can perform tasks in a quicker, more efficient way.

# ARTIFICIAL INTELLIGENCE

**Artificial intelligence (AI) and machine learning are often used interchangeably, but machine learning is a subset of the broader category of AI.**

### VISMAYA P.S
### S4 CT

Artificial Intelligence is the field of developing computers and robots that are capable of behaving in ways that both mimic and go beyond human capabilities. AI-enabled programs can analyze and contextualize data to provide information or automatically trigger actions without human interference.

Today, artificial intelligence is at the heart of many technologies we use, including smart devices and voice assistants such as Siri on Apple devices. Companies are incorporating techniques such as natural language processing and computer vision — the ability for computers to use human language and interpret images — to automate tasks, accelerate decision making, and enable customer conversations with chatbots.

## WHAT IS MACHINE LEARNING?

Machine learning is a pathway to artificial intelligence. This subcategory of AI uses algorithms to automatically learn insights and recognize patterns from data, applying that learning to make increasingly better decisions.

By studying and experimenting with machine learning, programmers test the limits of how much they can improve the perception, cognition, and action of a computer system.

## HOW COMPANIES USE AI AND MACHINE LEARNING

To be successful in nearly any industry, organizations must be able to transform their data into actionable insight. Artificial Intelligence and machine learning give organizations the advantage of automating a variety of manual processes involving data and decision making.

By incorporating AI and machine learning into their systems and strategic plans, leaders can understand and act on data-driven insights with greater speed and efficiency.

# HYBRID MESH FIREWALL

The primary advantage of a Hybrid Mesh Firewall is its multi-layered security approach

In today's rapidly evolving digital landscape, the security of network infrastructures has become a paramount concern. Traditional firewall solutions, while effective in the past, often fall short in addressing the complexities and scale of modern networks. This gap has led to the development of more advanced security mechanisms, among which the Hybrid Mesh Firewall stands out as a cutting-edge solution.

A Hybrid Mesh Firewall combines the functionalities of various firewall types and integrates them within a mesh network topology. This innovative approach harnesses the strengths of both traditional stateful inspection firewalls and next-generation firewalls (NGFWs), offering a multi-layered defense mechanism that is both robust and adaptable.

Centralized management is a key component of the Hybrid Mesh Firewall. Administrators can configure, monitor, and update all firewall nodes from a unified console. This simplifies policy enforcement and maintenance, reducing the complexity often associated with managing multiple security devices across a large network.

**FORTINET**

## Next-Generation Firewall (NGFW)

FortiGate is the only NGFW with unified management for hybrid mesh firewall

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