

# Algorithm

[ˈal-ɡə-,ri-thəm]

A set of instructions for solving a problem or accomplishing a task.

## The Algorithm

*"Decoding the Future of Technology"*

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Department of Computer Science & Engineering  
Technical Magazine 2024-2025



## **Message from the HOD**

### **Department of CSE**

Dear Readers,

In a world driven by technology, the ability to decode, innovate, and create defines the future. It gives me immense pleasure to present "The Algorithm"—a platform where curiosity meets knowledge, and ideas transform into breakthroughs.

This magazine is more than just a collection of articles; it is a testament to the ingenuity of our students and faculty. From artificial intelligence to Cybersecurity, from cutting-edge research to hands-on projects, "The Algorithm" captures the essence of what makes Computer Science and Engineering a field of endless possibilities.

As we navigate the digital age, let this magazine inspire you to think deeper, code smarter, and push boundaries. Remember, every great innovation begins with a single line of code—and who knows, the next revolutionary idea might just start here.

Keep exploring. Keep innovating.

Dr. J. M. Patil  
HOD, CSE

## Institute Vision and Mission

### Vision

To impart world-class Engineering and Management education in an environment of spiritual foundation to serve the global society.

### Mission

- To develop excellent learning center through continuous design and up gradation of courses in closed interaction with R&D centers, Industries and Academia.
- To produce competent, entrepreneurial and committed Technical and managerial human, with Spiritual foundation to serve the society.
- To develop state-of-the-art infrastructure, centers of excellence and to pursue research of global and local relevance.
- To strive for 'Sarve Bhavantu Sukhinah' - the ideal of our parent organization Shri Gajanan Maharaj sansthan, Shegaon through symbiosis of Science and Spirituality.

## Department Vision and Mission



### Vision

To achieve global recognition in Computer Science and Engineering education to serve the growing needs of industry and society

### Mission

- To imbibe programming skills in latest areas of computer science through project work
- To prepare the Innovators, Entrepreneur, Researchers and Educationalist through quality education and Industry Institute Interaction.
- To prepare good human beings who work with missionary zeal for upliftment of society.

## PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

- To excel in communication skill, teamwork, multidisciplinary approach and an ability to relate engineering issues to broader social context.
- Graduate will demonstrate the skills of Innovation, Entrepreneurship and Research.
- Graduate will be Computer professionals with latest skills and technologies to cater the needs of global IT industry and National Organizations.



## PROGRAM SPECIFIC OUTCOMES(PSOS)

- Demonstrate knowledge of advanced programming techniques to solve contemporary issues.
- Perform projects with novel ideas and implement them.
- Understand and develop ethical work culture and attitude by participating in social service .

# Editorial Board



**Prof. C. M. Mankar Faculty Advisor**

Welcome to the inaugural issue of *The Algorithm*, the premier technical publication of the Computer Science and Engineering Department.

This magazine is engineered to be the definitive platform for highlighting the groundbreaking innovation, dedicated research, and technical ingenuity cultivated within our academic community. Each edition will delve into the vanguard of emerging technologies, dissect foundational computing principles, and explore their transformative applications in real-world engineering challenges.

More than a publication, this initiative is a catalyst. It is designed to foster advanced problem-solving, sharpen critical analysis, and promote a culture of perpetual learning and intellectual curiosity.

We present *The Algorithm* with a singular vision: to galvanize our department to pioneer the future of technology driven by deep knowledge, ethical responsibility, and relentless innovation.

## Editorial Body



**Jay Joshi 3<sup>rd</sup> CSE**  
**Chief Editor**



**Bhumika Thakare 3<sup>rd</sup> CSE**



**Om Kadu 3<sup>rd</sup> CSE**



**Madhura Bathe 3<sup>rd</sup> CSE**

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## 1. Faculty Achievements: Awards, Recognitions, and Milestones

- The Department of Computer Science and Engineering proudly celebrates the academic accomplishments of its faculty. Dr. N. M. Kandoi has published the book *AI-Driven Healthcare* with Vinsha Publishing. Prof. V. S. Mahalle and Prof. C. M. Mankar have co-authored the book *Cyber Security*, published by REST Publishers. Dr. J. M. Patil, Head of the Department, has published the book *Textbook of Quality Assurance* with Shashwat Publication, reflecting the department's strong commitment to research and academic excellence.
- Dr. J. M. Patil (HoD, CSE) published research papers on smart waste management and intelligent crop management in reputed international journals, while Prof. V. S. Mahalle and Prof. K. Sable presented their research work at international and IEEE conferences in 2024.
- Dr. Rupali Zamare (CSE) received the Best Paper Presentation Award at ICTBIG 2024, while Prof. V. S. Mahalle was honored with the Best Researcher Award at ICDAAI 2024 for his research contributions.
- Prof. S. B. Pagrut and Prof. K. Sable (CSE) have been recognized as Wipro Certified Faculty in Database Solutions Expertise after completing the training program in October 2024.
- Faculty members have actively participated in one week ATAL-FDP programs to enhance their professional skills and knowledge

## 2. Student Achievements

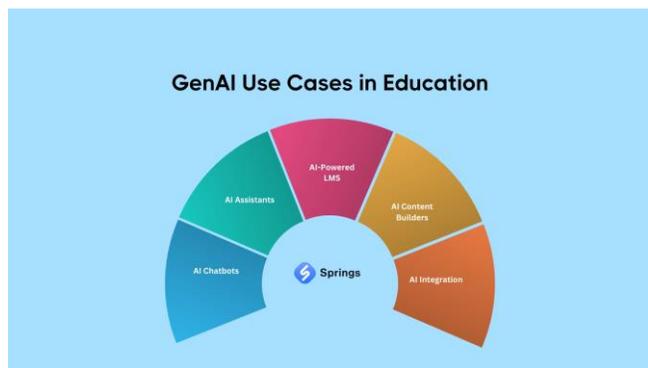
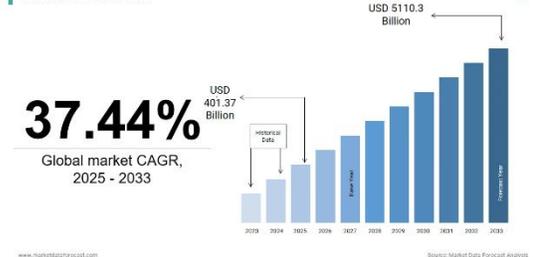
- CSE students excelled at the district-level Avishkar Project Competition (25 Oct 2024, Buldhana), with Sakshi Nimbolkar & Gayatri Deshmukh winning 1st prize for *CLEAN CONNECT*, Piyush Agroya & Anikesh Gadekar securing 1st for *Co-Carr*, and Krishna Kolekar & Samarth Zamare earning 3rd for *HireAI*.
- CSE students Parth Uplenchwar, Om Kadu, Jay Joshi, Vedant Dhepe, and Gourav Rajput secured a Top 30 position out of 200 teams at *CODORITHM 2K25*, an inter-college coding competition held at Sipna College, Amravati.
- A total of 36 CSE students are currently pursuing internships at reputed IT industries in the vicinity, receiving attractive stipends.
- CSE students Jay Joshi, Bhumika Thakare, and Madhura Bathe participated in the *Smart Hackathon* organized by Sant Gadge Baba University, Amravati.
- Several CSE students have registered for NPTEL courses, gaining knowledge on the latest trends and technologies
- Our college conducted an internal SIH, where the team secured **2nd Runner-Up** for the project *Digital Twin of Shegaon*; Team members: Om Kadu, Anagha Badhe, Shreyash Tote, and Subodh Munghate.

### 3. Technical News (2024–25)

#### Rapid Growth of Artificial Intelligence (AI)

Artificial Intelligence continued to grow rapidly during 2024–25 across industries. AI tools like ChatGPT, Gemini, and Copilot are being widely used in education, healthcare, and software development. Many organizations adopted AI for automation, data analysis, and customer support. Ethical AI and responsible use became key discussion points. Governments also started framing AI regulations.

#### Global Artificial Intelligence Market



#### Expansion of Generative AI in Education

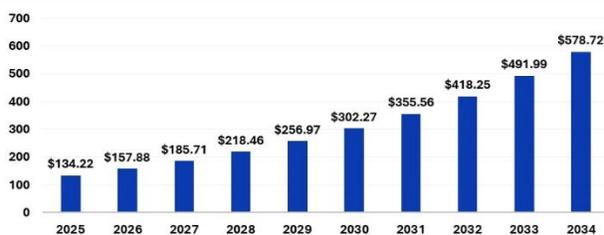
Educational institutions increasingly used Generative AI tools for learning and assessment. AI-powered platforms helped students with personalized learning paths and instant feedback. Teachers used AI to generate quizzes, notes, and lesson plans. However, institutions also introduced policies to prevent misuse. Focus on AI literacy became important for students.

#### Cybersecurity Threats and Zero Trust Adoption

Cyberattacks such as ransomware and phishing increased significantly in 2024–25. Organizations shifted towards Zero Trust Security models to protect data and systems. Multi-factor authentication and endpoint security became standard practices. Governments issued new cybersecurity guidelines. Awareness training for users gained importance.



#### Hybrid Cloud Market Size 2025 to 2034 (USD Billion)



The global hybrid cloud market size is predicted to increase from USD 134.22 billion in 2025 to approximately USD 578.72 billion by 2034, expanding at a CAGR of 17.63% from 2025 to 2034.

#### Growth of Cloud Computing and Hybrid Cloud

Cloud computing continued to dominate IT infrastructure worldwide. Many companies adopted hybrid cloud models combining public and private clouds. Cloud platforms supported scalability, remote work, and cost optimization. Demand for cloud security and cloud architects increased. Major providers enhanced AI-based cloud services.

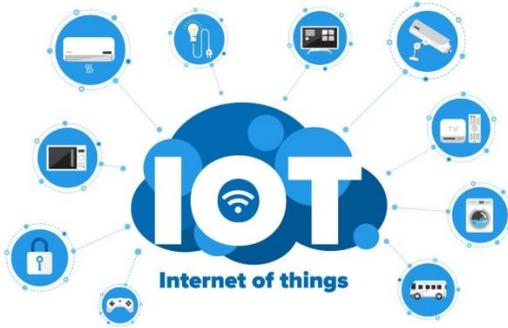
### Advancement in Quantum Computing Research

Quantum computing saw major research advancements during 2024–25. Tech giants and universities achieved better qubit stability and error correction. Though commercial use is limited, progress showed promise for cryptography and scientific research. Governments increased funding for quantum research. It is seen as the future of high-performance computing.



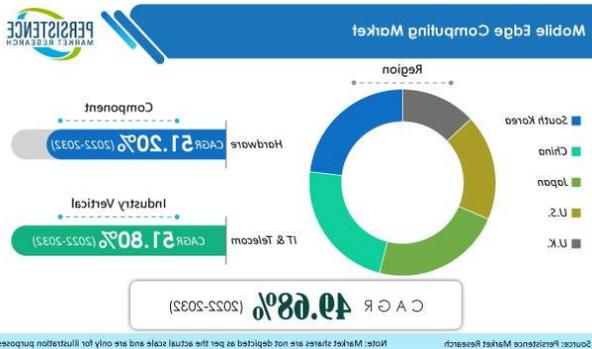
### Rise of Internet of Things (IoT) and Smart Devices

IoT devices expanded in smart homes, healthcare, and industrial automation. Smart sensors improved energy management and monitoring systems. Integration of IoT with AI enhanced real-time decision-making. Security of IoT devices remained a major concern. Smart cities projects gained momentum.



### Blockchain Beyond Cryptocurrency

Blockchain technology found applications beyond cryptocurrencies in 2024–25. It was used in supply chain management, digital certificates, and identity verification. Educational institutions adopted blockchain for secure certificate verification. Governments explored blockchain for transparent governance. Focus shifted to energy-efficient blockchain models.



### Growth of Edge Computing

Edge computing gained popularity to support real-time applications like IoT and autonomous systems. Data processing closer to the source reduced latency and bandwidth usage. Industries such as healthcare and manufacturing adopted edge solutions. It complemented cloud computing effectively. Edge security became a new focus area.

### Green Computing and Sustainable Technology

Sustainable and green computing became a major focus in 2024–25. Companies worked on reducing energy consumption of data centers. Use of renewable energy for IT infrastructure increased. Efficient hardware and software optimization were encouraged. Sustainability reporting became part of IT strategy.

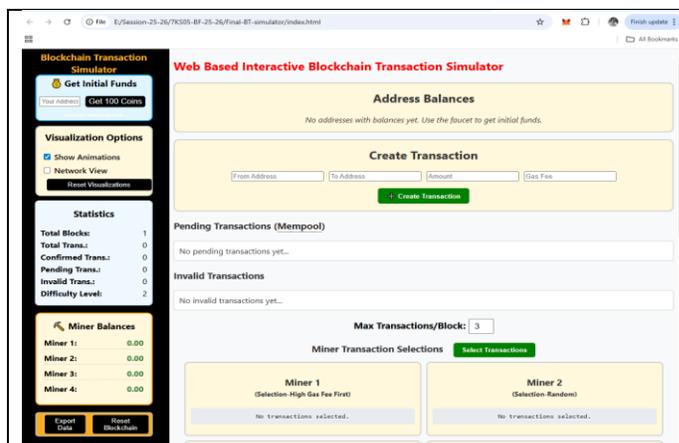


#### 4. Faculty Articles & Expert Talks:

- Prof. Shrijeet B. Pagrut (CSE) delivered an expert talk on cybersecurity and ethical hacking on 16 November 2024 at Gayadevi Joshi Aryabhatta Mahavidyalaya, Akola.

#### 5. Emerging Technologies:

Final-year students have developed a mini project based on an emerging technology, namely **Blockchain Technology**, demonstrating its core concepts and real-world relevance.



**Blockchain Transaction Simulator** is a web-based mini project that explains blockchain concepts through an interactive interface.

HTML and CSS define the structure and visual layout, while JavaScript implements transaction creation, block mining, and hashing logic.

The simulator visualizes transaction validation, mining difficulty, and miner rewards, helping learners understand blockchain without a real network.

#### 6. Industry Connect:

Around **30–40 students** from both **third and final year** actively participated in internships with nearby IT industries through online and offline modes, gaining valuable industry exposure along with attractive stipends.

#### Details of Skill Development and Innovation-Oriented Programs Conducted

| S. No. | Date       | Title of Program                                    | Description (Very Short – NAAC Style)                         | Resource Person(s)      | Participants           | Organized By                |
|--------|------------|---|---|-------------------------|------------------------|-----------------------------|
| 1      | 02-04-2025 | Awareness Program on NISP                           | Awareness on National Innovation and Startup Policy framework | Dr. Rupali A. Zamare    | 76 Students, 2 Faculty | Dr. R. A. Zamare, CSE       |
| 2      | 28-03-2025 | IDEA: Innovation                                    | Promotion of innovation and idea generation among students    | Dr. Rupali A. Zamare    | 76 Students            | Dr. R. A. Zamare, CSE       |
| 3      | 07-03-2025 | Nirmity Elite – Crafting Creativity through Content | Hands-on training in digital content creation                 | Mr. Sagar Lokhande      | 113 Students           | Dr. R. A. Zamare, CSE       |
| 4      | 01-02-2025 | Explore AI with Prompt Engineering                  | Introduction to AI tools and prompt engineering techniques    | Mr. Akshay Agrawal      | 65 Students            | Prof. P. R. Pohare, CSE     |
| 5      | 17-18-     | Outcome-Based Education (OBE) FDP                   | Training faculty on OBE framework and                         | Dr. A. R. Bhagat Patil, | 80 Faculty, 7 Staff    | Dr. J. M. Patil & Dr. R. A. |

| S. No. | Date       | Title of Program                                | Description (Very Short – NAAC Style)                        | Resource Person(s)      | Participants           | Organized By                |
|--------|------------|---|--|-------------------------|------------------------|-----------------------------|
|        | 01-2025    |   | assessment practices   | Prof. Vilas D. Alagdeve |                        | Zamare, CSE                 |
| 6      | 18-01-2025 | Tech Evolution: Gen AI & ML                     | Expert talk on emerging trends in AI and ML                  | Ms. Ekta Chugwani       | 64 Students            | Prof. Kalyani P. Sable, CSE |
| 7      | 16-01-2025 | National Startup Day                            | Interaction with startup founders and entrepreneurs          | Startup Founders Panel  | 73 Students            | Dr. R. A. Zamare, CSE       |
| 8      | 15-01-2025 | Achieving Problem–Solution & Product–Market Fit | Understanding startup validation and market fit concepts     | Dr. Mayur Dande         | 79 Students            | Dr. R. A. Zamare, CSE       |
| 9      | 11-01-2025 | One-Day Skill Development Program               | Exposure to advanced research and space technology           | Ms. Gargi Tela          | All CSE Students       | Dr. P. K. Bharne, CSE       |
| 10     | 11-01-2025 | IPR Session: Patent & Copyright                 | Awareness on IPR legalities, filing, and documentation       | Dr. P. William          | 80 Faculty             | Dr. R. A. Zamare, CSE       |
| 11     | 28-11-2024 | My Story – Motivational Session                 | Inspirational talk by innovation leader                      | Dr. Ajay Bhaurao Lad    | 69 Students            | Dr. R. A. Zamare, CSE       |
| 12     | 15-08-2024 | Intra-Institutional Startup Competition         | Platform for idea pitching and startup competition           | —                       | 41 Students, 9 Faculty | Dr. R. A. Zamare, CSE       |
| 13     | 12-01-2024 | National Entrepreneurship Day                   | Awareness session on entrepreneurship and industry practices | Mr. Sushil Deshmukh     | 82 Students            | Dr. R. A. Zamare, CSE       |

### 7. Workshops, Seminars & FDPs:

- **Nirmiti Elite**, a hands-on workshop organized by CSESA, trained students in mobile-based content creation and cinematography under the guidance of industry-experienced creator **Sagar Lokhande**, with active participation from **140 students**.
- A **two-day Web Development Workshop** organized by CSESA provided **40 students** with practical exposure to **HTML, CSS, Git, GitHub, and startup fundamentals**, conducted by student trainers **Jay Joshi, Om Kadu, Bhumika Thakare, and Subodh Munghate**.