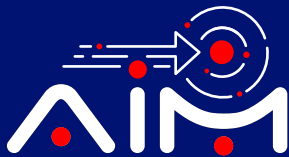




TECH TALK

Issue 151 | January 2025

**Pioneering Tech
Leadership with a
Legacy of Excellence.**



Galaxy Office Automation Pvt. Ltd.

• Transform Your SOC

Galaxy and CrowdStrike collaborated to host a ground-breaking event at ITC Maratha Mumbai with a primary focus on transforming Security Operations Centres (SOCs) to respond more promptly.

The event served as a platform for cybersecurity professionals and industry front-runners to exchange insights and best practices on fortifying SOC's for swifter and more effective responses to cyber threats.

Held at ITC Maratha Mumbai, the event facilitated networking opportunities and knowledge dissemination, empowering participants with a comprehensive understanding of state-of-the-art security solutions for protecting their organisations against evolving threats.



Foreword

Dear Readers,

On behalf of all of us at Galaxy, I wish you a very happy, healthy and successful 2025.

At the beginning of every year, we at Galaxy try and predict the technologies that will see widespread adaption during the year. Our top picks for this year are Agentic AI, Post Quantum Cryptography, Energy efficient GPUs (or alternative semiconductor chips that can facilitate AI processing), Data Engineering and AI assisted cybersecurity.

Last year we saw the growth and penetration of Generative AI with the models becoming larger and the tokens getting cheaper. We expect that trend to continue. In the same flow, we had a lot of agents being developed to perform repetitive tasks or handling specific actions. This year we expect Agentic AI to further enhance the capabilities of these agents by enabling them to make decisions, automatically learn from experiences and solving complex problems.

Nearing the end of 2024, Google unveiled its state of the art quantum chip. This could be the breakthrough that transforms quantum computing from a laboratory project to a practical tool. All the current data security is based on cryptography that could be decrypted by quantum computing in a matter of minutes. The threat of encrypted data being stolen now and decrypted later, when quantum computing is available, is very very real. This will create a huge demand for tools that use encryption now that is equally difficult to decrypt by existing computing and quantum computing.

With GPU tokens getting cheaper, there are many AI use cases that would start becoming viable. At that time, it is imperative that the data should be available. Data Engineering would play a huge part with enterprises scrambling to get their data in place for AI use cases that were not even considered because of the cost.

At Galaxy, we are at the forefront of bringing these solutions to you. Do reach out to our experts and evangelists to have a conversation around these technologies and how they could help your business.

Happy reading.

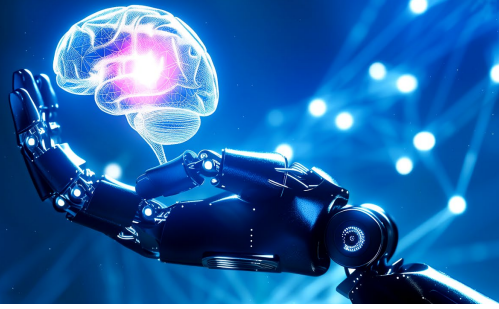


Anoop Pai Dhungat

Chairman & Managing Director



Future is now!

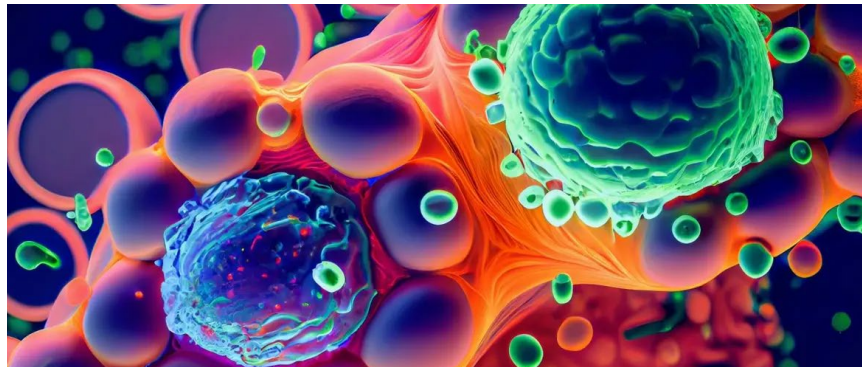


Scientists Reprogram Immune Cells to Slow Aging

As the number of centenarians - those who reach their 100th birthday - continues to rise, research and medical innovations are helping people to live longer, healthier lives. However, there are still plenty of new measures and methods for scientists to explore.

New research from Cold Spring Harbor Laboratory in Cold Spring Harbor, NY, that says the body's T cells — a type of white blood cell — can be reprogrammed to fight aging.

Using a mouse model, scientists found that T cells can be used to fend off another type of cell that increases as a person ages and causes inflammation, rendering the aging immune system less effective over time.



Using CAR T-cell Therapy to Reverse Aging

T cells are a type of white blood cell known as lymphocytes. They are an important part of the immune system, helping the body to find and destroy potentially harmful pathogens such as viruses and bacteria.

T cells are unique in that different T cells are designed to seek and destroy specific pathogens.

For example, a baby's T cells will be tasked with remembering different viruses they come in contact with for the first time. Then as the baby grows and becomes older, those same T cells can be used to fight off those same viruses throughout their life.

T cells are made within the body's bone marrow. They then move to the thymus gland to further develop. Once mature, T cells travel to the tissues and organs within the lymphatic system and circulate within the bloodstream.

Over the past few years, researchers have been looking at ways to use T cells to fight certain diseases such as cancer.

This has led to the development of chimeric antigen receptor (CAR) T-cell therapy—a type of immunotherapy where T cells are taken from a person, altered in the lab, and then infused back into the same person to fight a particular type of cancer.

Scientists have also been researching the use of CAR T-cell therapy in the treatment of non-cancer diseases such as autoimmune diseases and viral infections like HIV and hepatitis C.

How Do T Cells Change with Age?

Dr. Corina Amor Vegas, Assistant Professor at Cold Spring Harbor Laboratory (CSHL) and lead author of this study, said they focused on T cells as a potential way to fight aging because the immune system is really powerful at eliminating damaged cells in younger individuals.

“Thus, we wondered whether in aging we could redirect and repower the T cells to eliminate the damaged cells that accumulate,” Dr. Amor Vegas told Medical News.

Dr. Amor Vegas referred to these damaged cells as senescent cells.



Eliminating Damaged Cells Led to Healthier Aging

For this study, Dr. Amor Vegas and her team found they could use CAR T-cell therapy to eliminate damaged or senescent cells in mice.

Scientists found the mice treated with CAR T-cell therapy to remove senescent cells became healthier with lower body weight, improved metabolism, and glucose tolerance, and increased physical activity.

“We were very excited to see that the CAR T cells were able to eliminate the senescent cells and drive these effects,” Dr. Amor Vegas said. “We were also really excited about the long-term durability of these effects.”

“Interestingly, in our work, we saw not only therapeutic effects when we treated aged animals, but we also saw preventive effects,” she continued. “Thus, when we treated young animals — once, only in their youth — and we let them age, they aged better.”

When asked about future plans for this research, D. Amor Vegas said they are interested in the potential implications for the treatment of age-related diseases in humans.

“Nonetheless it’s a long road and there is still a lot more research that needs to be done to optimize the approach,” she added.

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What is Automation? A Comprehensive Overview

Automation is the application of technology, programs, robotics, or processes to achieve outcomes with minimal human input.

Automation is becoming increasingly ubiquitous in the modern world and has countless applications, including enterprise applications such as business process automation (BPA), AIOps, and enterprise automation, industrial automation applications such as robotics used in automotive manufacturing, and consumer applications such as home automation.

Automation software and technologies are used in a wide array of industries, from finance to healthcare, utilities to Défense, and practically everywhere in between. Automation can be used in all aspects of business functions, and organisations that wield it most effectively stand to gain a significant competitive advantage.

Organisations use automation to increase productivity and profitability, improve customer service and satisfaction, reduce costs and operational errors, adhere to compliance standards, optimise operational efficiency and more. Automation is a key component of digital transformation and is invaluable in helping businesses scale.



Types of Automation

Basic Automation

Basic or task automation takes simple, routine tasks and automates them. Basic automation is used to digitise, streamline, and centralise manual tasks such as distributing onboarding materials to new hires, forwarding documents for approvals, or automatically sending invoices to clients. Using automation instead of human workers to complete these tasks helps eliminate errors, accelerate the pace of transactional work, and free employees from time-consuming tasks, allowing them to focus on higher value, more meaningful work.

Process Automation

Process automation takes more complex and repeatable multi-step processes (sometimes involving multiple systems) and automates them. Process automation helps bring greater uniformity and transparency to business and IT processes. Process automation can increase business productivity and efficiency, help deliver new insights into business and IT challenges, and surface solutions by using rules-based decisioning. Process mining, workflow automation, business process management (BPM), and robotic process automation (RPA) are examples of process automation.

Intelligent Automation

Intelligent automation is a more advanced form of automation that combines artificial intelligence (AI), business process management, and robotic process automation capabilities to streamline and scale decision-making across organisations. For example, virtual agents that are powered by technologies like natural language processing, intelligent search, and RPA can reduce costs and empower both employees and external customers. Such automation contributes to increased productivity and an optimal customer experience. AIOps and AI assistants are other examples of intelligent automation in practice.

Automation Use Cases

The use of a repeated set of processes can increase productivity and efficiency and reduce human errors. Automation can drive business value in numerous areas, including:

- **Business Automation**

Business automation refers to technologies used to automate repetitive tasks and processes to streamline business workflows and information technology (IT) systems. These solutions can be tailored specifically to the needs of an organisation.

- **Content Management**

Content management solutions capture, store, activate, analyse, and automate business content.

- **Document Processing**

Document processing solutions use artificial intelligence technologies like machine learning and natural language processing to streamline the processing of business documents.

- **Document Management**

Document management solutions capture, track, and store information from digital documents.

- **Workflow Automation**

Workflow automation solutions use rules-based logic and algorithms to

perform tasks with limited to no human interaction.

- **Decision Management**

Decision management solutions model, manage, and automate business decisions through machine learning.

- **Process Mapping**

Process mapping solutions can improve operations by identifying bottlenecks and enabling cross-organisational collaboration and orchestration.

- **IT Automation**

IT automation is the creation and implementation of automated systems and software in place of time-consuming manual activities that previously required human intervention. IT automation helps accelerate the deployment and configuration of IT infrastructure and applications and improve processes at every stage of the operational lifecycle.

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Next-Generation SIEM (Security Information and Event Management)

Next-Generation SIEM (Security Information and Event Management) systems represent the evolution of traditional SIEM platforms, integrating advanced technologies like artificial intelligence (AI), machine learning (ML), and automation to provide deeper insights, faster threat detection, and efficient incident response. This innovation enhances the capabilities of cybersecurity teams to handle modern, sophisticated threats.

Technologies Involved

- **Artificial Intelligence (AI) and Machine Learning (ML):** AI and ML analyse large volumes of data to identify patterns and anomalies indicative of threats. They enable predictive analytics, enhancing proactive threat hunting.
- **User and Entity Behaviour Analytics (UEBA):** UEBA monitors and analyses user activities and entity behaviour to detect suspicious actions or deviations.
- **Big Data and Advanced Analytics:** Modern SIEMs use big data frameworks to handle vast datasets in real time, ensuring comprehensive data analysis.
- **Threat Intelligence Integration:** Ingests threat intelligence feeds from multiple sources to correlate external threats with internal activity.
- **Automation and Orchestration:** Automates routine tasks, reducing response times and allowing analysts to focus on complex threats.
- **Cloud and Hybrid Environment Support:** Supports monitoring across on-premises, cloud, and hybrid environments, providing a unified security view.
- **Real-time Monitoring and Correlation:** Aggregates and correlates logs and events from diverse sources to provide real-time threat detection

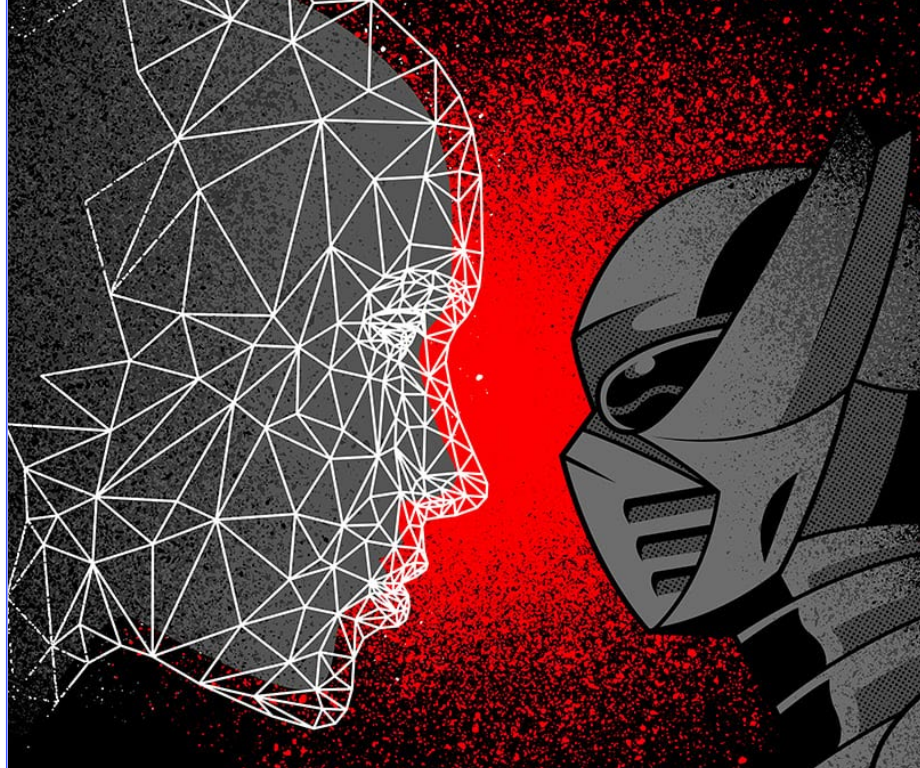


Benefits

- **Benefits of Next-Gen SIEM: Enhanced Threat Detection:** Identifies advanced persistent threats (APTs) and zero-day vulnerabilities using AI-driven analytics.
- **Reduced False Positives:** AI/ML algorithms refine detection capabilities, reducing noise and minimising false alerts.
- **Faster Incident Response:** Automated workflows and incident response orchestration streamline investigation and mitigation.
- **Comprehensive Visibility:** Provides a holistic view of the organisation's security posture across all environments.
- **Regulatory Compliance:** Assists in meeting compliance requirements by providing audit trails and real-time reporting.
- **Scalability and Flexibility:** Scales to accommodate growing data volumes and integrates with evolving IT infrastructures.

Use Cases

- **Insider Threat Detection:** Monitors employee behaviour for unusual activities, helping to identify potential insider threats.
- **Advanced Persistent Threats (APT) Mitigation:** Detects and responds to long-term, stealthy attacks aimed at extracting sensitive information.
- **Cloud Security Monitoring:** Ensures visibility and control over cloud resources and services, detecting misconfigurations and threats.
- **IoT Security:** Secures IoT devices by monitoring network traffic and identifying compromised devices.
- **Critical Infrastructure Protection:** Protects critical assets like financial systems, healthcare data, and government networks.
- **Incident Investigation and Forensics:** Provides comprehensive logs and event data to support post-incident investigations.



Next-generation SIEM platforms are essential for organisations to stay ahead of evolving cyber threats. By leveraging AI, ML, and automation, they enhance the efficiency and effectiveness of security operations, providing robust protection and ensuring compliance with industry standards.

Galaxy can assist with next-gen SIEM integration for real-time monitoring, AI-driven analytics, and enhanced threat detection. To talk to our experts, email us at marketing@goapl.com

Ai2 Releases New Language Models Competitive with Meta's Llama

There's a new AI model family on the block, and it's one of the few that can be reproduced from scratch.

On Tuesday, Ai2, the non-profit AI research organisation founded by the late Paul Allen, released OLMo 2, the second family of models in its OLMo series. (OLMo's short for "Open Language Model.") While there's no shortage of "open" language models to choose from (see: Meta's Llama), OLMo 2 meets the Open-Source Initiative's definition of open-source AI, meaning the tools and data used to develop it are publicly available.

The Open-Source Initiative, the long-running institution aiming to define and "steward" all things open source, finalised its open-source AI definition in October. But the first OLMo models, released in February, met the criterion as well.

"OLMo 2 [was] developed start-to-finish with open and accessible training data, open-source training code, reproducible training recipes, transparent evaluations, intermediate checkpoints, and more," AI2 wrote in a blog post. "By openly sharing our data, recipes, and findings, we hope to provide the open-source community with the resources needed to discover new and innovative approaches.

There's two models in the OLMo 2 family: one with 7 billion parameters (OLMo 7B) and one with 13 billion parameters (OLMo 13B). Parameters roughly correspond to a model's problem-solving skills, and models with more parameters generally perform better than those with fewer parameters.

Like most language models, OLMo 2 7B and 13B can perform a range of text-based tasks, like answering questions, summarising documents, and writing code.

To train the models, Ai2 used a data set of 5 trillion tokens. Tokens represent bits of raw data; 1 million tokens are equal to about 750,000 words. The training set included websites "filtered for high quality," academic papers, Q&A discussion boards, and math workbooks "both synthetic and human generated."

Ai2 claims the result is models that are competitive, performance-wise, with open models like Meta's Llama 3.1 release.



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India Data Center Capacity to More Than Double by FY27: CRISIL

India's data center capacity is projected to grow over twofold, reaching 2-2.3 GW by FY according to CRISIL Ratings. This growth is driven by increased digitalisation, rising coadoption, surging data consumption, and the rapid rise of Generative Artificial Intelligence (GenAI).

Manish Gupta, deputy chief ratings Officer, CRISIL Ratings said that to meet the growing data centre demand, an investment of Rs 55,000-65,000 crore is required over the next three fiscals, primarily towards land and building, power equipment and cooling solutions. "Data centre operators typically build infrastructure – land and building, which account for 25-30% of overall capex – with the expectation of future tie-ups. While this approach may expose incremental capacities to utilisation risks, strong demand is expected to support capacity utilisation to reach 80-90% within a year or two, he said."

Meeting this demand will require an investment of Rs. 55,000-65,000crore over the next three years. Most of this capital expenditure will go toward land acquisition, building construction, power equipment, and cooling solutions.


A higher reliance on debt funding is expected, leading to a moderate rise in debt level for operators. However, robust demand will keep offtake risks minimal. Stable cash flows and steady credit profiles are anticipated for data center operators due to strong demand and predictable customer bases.



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