



CENTRAL TRAINING COLLEGE
TELECOM & INFORMATION TECHNOLOGY



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How can Axiom-4 Experiments Enhance India's Space Research and Application?

- **Sprout Growth in Microgravity:** This experiment explores how spaceflight impacts the **germination and growth** of crop seeds, which is essential for creating sustainable food sources for astronauts on long missions.
 - It will contribute to understanding how to produce food in space efficiently.
 - The findings could have **broad applications in urban farming and indoor agriculture**, promoting **sustainable food production** in cities and helping urban populations grow their own food, reducing dependency on external supplies.



Cyanobacteria for Life Support:

Cyanobacteria are crucial for developing **life support systems** on spacecraft due to their ability to photosynthesize.

This experiment will study their growth and biochemical activity in space, aiding in the creation of closed-loop systems for oxygen and food production in space.

The knowledge gained from this experiment could improve **environmental control systems** on Earth, particularly in **sustainable building designs, water purification, and air quality management** in isolated or urban areas.



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Space Microalgae Growth: Microalgae are potential resources for food, fuel, and life support.

This experiment will study how microgravity affects the growth and metabolism of microalgae, which could be used in **bioregenerative life support systems** for space missions.

Microalgae are already used on Earth for **biofuels, waste management, and nutritional supplements**.

The research could lead to **greener energy sources** and **sustainable food alternatives** that could revolutionize the way we think about **food production** and **renewable energy**.

Muscle Loss in Space (Myogenesis):

This study aims to understand muscle dysfunction in microgravity, which leads to **muscle atrophy** in astronauts.

By identifying the molecular pathways involved, it could help develop therapies to prevent muscle loss during long missions.

The findings could enhance **muscle atrophy treatments** for patients on Earth, especially for the elderly and those dealing with **muscular dystrophies** or **prolonged immobility**, thus improving health outcomes on Earth.

Voyager Display Interaction in Space:

This experiment will study how **microgravity affects cognitive and physical tasks** related to using electronic displays, aiming to improve the design and interaction of spacecraft technology

The research could improve **user experience and productivity** in **smart devices, gaming systems, and healthcare applications**, leading to **better ergonomic designs** for everyday tech, minimizing stress and enhancing efficiency.



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Communication Systems:

Satellite communication technologies developed for space exploration have revolutionized global communication, facilitating faster and more reliable connections.

Initially **intended for space missions**, these systems have become integral to global connectivity.

A prime example is **GPS technology, which evolved from military satellite navigation systems** and is now indispensable in everyday applications like navigation and logistics.

The global GPS market was valued at USD 94.25 billion in 2022.

NavIC, India's indigenous satellite navigation system, is poised to significantly transform sectors like transportation, logistics, and agriculture by providing accurate positioning and timing services

NASA developed the technology used in video conferencing to enhance communication for astronauts, which now powers tools like **Zoom, Teams, and Google Meet**.

Food Preservation:

Space research has driven innovations in food preservation, **particularly freeze-drying and vacuum sealing**, which were initially developed for astronauts' space missions.

These technologies have significantly extended the shelf life of food, reducing waste and improving food security.

Freeze-dried fruits, vacuum-sealed meals, and space-inspired packaging technologies now feature prominently in consumer markets, offering convenience and reducing food waste.

Space-grown food like the "Veggie" experiment aboard the ISS has helped boost space agriculture research.



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Canva

The Canva logo, featuring the word "Canva" in a white, cursive script font, centered within a solid teal circle.

Engage existing customers and generate interest from prospects with a professional newsletter using Canva's free newsletter maker. Perfect for making a printed bulletin for real estate, school, and church activities or starting an online email digest for your company, family, or Christmas and other events. Find the right newsletter design on our vast template and elements library. Optimize each newsletter template for printing at 21 × 29.7 cm or 8.5 × 11 inches print sizes. Or, embed your designs as HTML files for your email list or websites.

A company newsletter template is a great way to keep your employees and customers up-to-date on what's going on with your business. You can use a newsletter to share news, announce changes or new products, or simply to keep everyone in the loop.

There are a few things you'll need to do to get started with your company newsletter: decide what format you want your newsletter to take. There are many different ways to format a newsletter, so take some time to think about what will work best for your company and your audience, and gather the content you want to include. This can be anything from news articles to announcements to product information, choose a template. There are many different newsletter templates available online, or you can create your own, and put everything together and send it out! Your employees and customers will appreciate being kept in the loop.

With Venngage, you can create a beautiful company newsletter without any design experience or knowledge. We have a wide variety of templates available, so you can find one that fits your company's style and branding. And if you want to get really creative, you can customize your template with our easy-to-use design tool.



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Canva

The Venngage editor is a powerful tool that allows you to customize everything in your company newsletter template, from the font styles and icon styles to the color palette and the content itself. With this tool, you can easily create a beautiful and professional-looking newsletter that will impress your employees and customers.

The Venngage icon library is a great way to add new and unique icons. You'll find a variety of icon styles, like gradient illustrations, detailed illustrations, bold icons, flat icons and line icons. Stick with one style of icon throughout your design to maintain a cohesive look. With the Venngage editor, you can easily add new icons to your newsletter template and customize them to match your company's branding. Simply choose the icon you want to use, edit the color, size and style to fit your needs, and add it to your template. With the Venngage icon library, creating a professional and stylish newsletter is easy! Your company newsletter is an important tool for keeping employees and customers up-to-date on what's going on with your business.



With Venngage, you can easily customize your newsletter heading with a new title, font and icon. Feel free to get creative and think of new combinations that will work best for your company and your audience. It's important to remember that you can customize the page dimensions of your company newsletter template to suit your needs. Whether you want to add more pages or extend the dimensions, you can do so with the click of a button or by manually adjusting the settings in the tab. This way, you can always ensure that your newsletter is the perfect size and length for your audience.



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Android

What is android :- Android, in the context of technology, primarily refers to an open-source operating system primarily used for mobile devices like smartphones and tablets. It was developed by [Google](#) and is based on the [Linux](#) kernel. Beyond mobile devices, Android is also used in other devices like smartwatches, TVs, and in-car entertainment systems. The term "Android" also has a secondary meaning, referring to a robot or other artificial being resembling a human, particularly in science fiction.

- **Android as an Operating System:- Open-source:** This means the source code is publicly available, allowing developers and manufacturers to customize and modify it.
- **Mobile-focused:** While it has expanded to other devices, Android's core function is as the operating system for mobile devices.
- **Market leader:** Android is the most popular mobile operating system globally.
- **Customizable UI:** The open-source nature allows for extensive customization of the user interface.

Android-16

- **Vision for the Future & Android 16 Enhancements:-** Android 16's evolution, spotlighting the Material 3 Expressive redesign—bringing richer animations and color themes—plus new features like Live Updates, improved notifications, and strengthened security through Advanced Protection. He also discussed Google's strategic integration of ChromeOS and Android and the backbone role of Gemini AI in the ecosystem.
- **Enhanced Security with USB Protection:-** Android 16 adds a new Advanced Protection setting that blocks USB data transfer while the phone is locked—improving defense against physical attacks. However, users should note this may interfere with fast charging unless the phone is unlocked.
- **June Pixel Drop: New Android 16 Features:-**
 1. The June Pixel Drop delivered Android 16 with a host of usability improvements:



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2. Pixel VIPs widget to pin contacts on the home screen
3. Gboard generative AI stickers
4. Satellite SOS coverage (Australia)
5. Accessibility upgrades like expressive captions and improved Magnifier
6. Pixel Camera enhancements and smart AI-powered photo editing
7. Critical Security Patch in August Release
8. Google rolled out the August 2025 security update (BP2A.250805.005) for Pixel devices, patching a serious remote code execution vulnerability (CVE-2025-48530), fixing navigation glitches, and resolving dark mode schedule issues.



- Improving the Private Space Feature:- Google is streamlining file management inside Android 16's Private Space—adding an “Add” button for smoother transfers from the Files app or Google Play, replacing the current cumbersome “Install” flow. A public beta is expected in QPR2.
- Samsung’s One UI 8 (Android 16) Rollout:- Samsung confirmed that the Galaxy S25 series will receive One UI 8, based on Android 16, in September 2025. It introduces better Bluetooth functionality, smart sharing, personalization, and security features.



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