



BITS AND BYTES



Dept. Of Electronics & Communication Engg.

EDITORIAL DESK

I am delighted to present to you Volume 3 Issue 1 of the ECE Department's e-Newsletter, "Bits and Bytes." The core objective of our Department is to cultivate energized engineers with the unrelenting desire to fulfill their objectives and aspirations. Furthermore, we aim to revitalize their vivid minds, leading them to spectacular ACHIEVEMENTS in the fields of Electronics and Communication. I would like to express my deepest gratitude to our renowned Principal, Dr. Manpreet Singh Gujral, and the Department Head, Dr. Davinder Singh Saini, for their essential assistance in vigorously encouraging student participation in this edition. I also want to thank the diligent students and staff members whose passionate involvement and prompt efforts helped bring the undertaking to fruition. The student committee's relentless dedication deserves special recognition for achieving the e-Newsletter's spectacular success.

Within Its pages you will find the exceptional participation of students in the annual SPORTS MEET-2024 and more. I Want to thank the staff and the Department's Students to make the SPORTS MEET a grand success. Readers, you will also discover a rich tapestry Student Achievements, and Tech news from all around the globe.

I am filled with pride looking back at all that we have achieved this season. The incredible success of SPORTS MEET mark a watershed moment in our college's journey toward excellence. As we step into a new year, I am confident that with the right support, our students will continue to reach new heights and make us proud.

We eagerly await your valuable feedback on this e-newsletter, and our editorial board is thrilled to assist you in any way possible.

Wishing you Pleasant Nostalgia, and Best Wishes.

Dr. Shilpa Jindal (Editor Departmental Newsletter)

Universal Metasurface Antenna For High Security 6G Communication

CO22541(SANTOSH)

Professors Chan Chi-hou and Wu Gengbo from the City University of Hong Kong have developed an amazing antenna called a metasurface antenna. This antenna is a game-changer in antenna technology because it can control all the important parts of electromagnetic waves using software. This is a big deal in engineering because it allows us to change electromagnetic radiation in new ways without needing to change its size, shape, frequency, or direction.

Their work is a big step forward in technology, especially as we move towards 6G wireless communication. This antenna has a lot of potential uses because it can manipulate waveforms and has strong security features. It can improve how sensors and communication work together, create better information systems, make real-time images, and even transfer power wirelessly. Its ability to change direction also helps with privacy and security in communication.

Overall, this innovation is going to shape the future of how we communicate wirelessly and use information, especially in the 6G era.

Budget-friendly silicon solar cells achieve 26.4% efficiency:

Researchers at Suzhou Maxwell Technologies Co. Ltd., New South Wales, and Dalian University have developed a new method for making silicon heterojunction (SHJ) solar cells. These cells can convert sunlight into electricity with a high efficiency of 26.4%. SHJ solar cells are known for their effectiveness, cost-friendly production, and stable performance in varying temperatures. However, they face challenges in scalability and production costs.

To address these challenges, the research team made several improvements. They replaced traditional materials with doped hydrogenated nanocrystalline silicon and its alloys containing oxygen and carbon. This substitution helped reduce the unwanted absorption of light and resistance in the cells. Additionally, they used very high-frequency plasma-enhanced chemical vapor deposition (PECVD) systems for quicker and more efficient deposition of materials. They also implemented seed-free plated copper electrodes to enhance current flow.

These innovations aim to make SHJ solar cells more scalable, affordable, and efficient, contributing to the fight against carbon emissions and climate change. High-efficiency SHJ solar cells represent a significant advancement in sustainable energy technology, paving the way for a cleaner and greener future.

CES 2024 Highlights:

1. Google's First Tensor Processing Unit Architecture:

The custom architecture of the TPU v1 was crucial in enabling it to generate much better performance with much lower energy use than contemporary CPUs and GPUs.

The TPU v1 was only the start of the story. TPU v1 was designed quickly and with the sole objective of making inference faster and more power efficient. It had several clear limitations and was not designed for training. Both inside and outside Google firms would soon start to look at how TPU v1 could be improved

2. Global Semiconductor Sales Increased 16.3% Year-to-Year in February:

WASHINGTON—April 3, 2024—The Semiconductor Industry Association (SIA) today announced that global semiconductor industry sales totaled \$46.2 billion during February 2024, an increase of 16.3% compared to the February 2023 total of \$39.7 billion but a decrease of 3.1% from the January 2024 total of \$47.6 billion. Monthly sales are compiled by the World Semiconductor Trade Statistics (WSTS) organization and represent a three-month moving average. SIA represents 99% of the U.S. semiconductor industry by revenue and nearly two-thirds of non-U.S. chip firms.

3. Taiwan tremors, chip disruption won't move electronics prices in India, says industry:

An earthquake in Taiwan that has disrupted semiconductor manufacturing in the Southeast Asian island nation is not likely to cause any impact on the prices of cars, smartphones, and other electronics in India on account of strong chip inventories, according to industry experts.

4. RED announces VISC

RED (“RED”) announces VISC, an algorithmic microprocessor ISA and hardware design that extends the capabilities of RISC-V for Edge AI, autonomy and cryptography.

VISC is an accelerated RISC-V microprocessor core, which optimizes complex mathematical algorithms for parallel execution in its reconfiguration hardware engine. The performance boost delivered by VISC, compared with standard RISC-V, is in demand for the era of ubiquitous AI and the associated exponential increase in data.

STUDENT ACHIEVEMENTS

Winners of the Annual Sports Meet 2024

- Babalpreet Kaur(CO21525) won the First prize in 110 meters girls hurdle race , triple jump girls and second prize in girls high jump , shotput girls, and third in javelin throw girls.
- Anju Devi(CO21515) won second prize in Girls Hurdle 110 meters , Girls discuss throw.
- Kanhaiya Aaditya (CO22525) won the third prize in relay (Boys).
- Saksham Kohli (CO22540) won the second prize in hammer throw and third prize in shot put.

Chandigarh College of Engg. & Tech.



CCET

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