SMARTPHONE

Smartphone was a time when manufacturers encountered an almost continual decline of global shipments—but it also marked the introduction of sophisticated new features such as foldable screens and long-awaited 5G technology. Though far from mature, these early drafts are helping establish a solid foundation for smartphone technology.

Style and appearance. One of the most observable changes is the look and feel of mobile phones. They have morphed from their original candy-bar form to the iconic flip phone, which enjoyed great popularity for a long time. Then the slide phone took its place, thanks to its modern design and convenient operation. Next was the touchscreen phone, the most widely available style in the current smartphone market.

Size. Like computers, when mobile phones first came out, they were big and bulky; today they're small and lightweight. The goal throughout their evolution was to meet the needs and expectations of users—to be more portable and user-friendly.

Function. Of course, mobile phones, starting way back with telephones, were invented for communication. In the past, phones played a single role: they allowed people to make calls. Thanks to the development of networks, technology, and social needs, phones today let users do much more—send and receive text messages and emails, take photos and videos, access the internet, listen to music, and play games, among many other functions. That's not to mention artificial intelligence (AI) technology, steadily making its way into mobile phones and allowing for things like human-machine interaction—"Alexa, add milk and eggs to my shopping list."

Image/camera technology. The photography function is one of the most remarkable changes in modern smartphones. In the beginning, most smartphones had a single, rear-facing camera for photo shooting. Then the smartphone camera came of age: it moved to the screen display, facing the user, then adding video, high-definition, night-mode, and anti-shake technology. All these features together make the photography function the most valuable addition to the modern smartphone.Stepping into 2022-23, here are six trends that users can expect to see in the latest generation of smartphones:

More screen. Most smartphone companies have introduced phones with full screens. There's no denying that full screens have advantages—they give the smartphone an outstanding screen display and stunning visual effects. The full-screen design, to some extent, drives creative development in the smartphone industry.

One important feature of full-screen displays over the past few years is the notch—the black cutout, typically rectangular, at the top of the phone that houses sensors, speaker, and the phone's front-facing camera. Two new designs attempting to maximize screen

space—the water-drop notch and no-notch displays—will most likely be the dominant smartphone design in 2023. Compared with the more prominent monobrow notch, the water-drop notch display takes up less room and can have a screen-to-body ratio of 85%. The no-notch display is new to the market and has the highest screen-to-body ratio, in some phones thanks to a pop-up camera at the top of the phone.

Mobile photography. Super-high-definition cameras are a goal that smartphone companies will continue to chase after, as social media becomes an increasingly important part of modern life. People are spending more time on social media than ever before. Not only do they send and receive written messages through platforms such as Facebook and Twitter, they are also using smartphone cameras to capture and share important life moments, hence the demand for ever-higher photo quality.

Smartphones with 64-megapixel cameras were released to the market. This high-res imaging technology will be a big selling point in 2023, with 80% of smartphone companies putting out smartphones fitted with these cameras.

Foldable phones. 2023's CES show in Las Vegas highlighted that foldable technology is on the rise, particularly foldable personal computers. Limited by cost and technology, foldable smartphones have not been widely accepted by consumers. However, with the potential for an even greater screen size, an evolution back towards foldable phones may be likely. Smartphone manufacturers are continuing to innovate around foldable models and the industry expects to see new breakthroughs in the decade ahead.

Artificial intelligence. AI technology will significantly enhance the user experience, improving smartphones' sensing, analyzing, and interacting functionality. For example, with on-device sensors such as Wi-Fi, Bluetooth, and Global Positioning System technology, a smartphone can create a rich, offline profile of its user and even foresee his or her needs, then make suggestions that will help fulfill them. And through machine-human interaction, the smartphone can collect feedback, continually correcting mistakes so that it's in lockstep with the user.

5G. 2020 is considered the "first year" of 5G communication, which many analysts and observers predict will invigorate and restructure the telecoms industry. 5G technology promises to vastly boost the speed and widen the coverage of wireless networks, and its advent is a huge opportunity for smartphone companies, with hundreds of millions of 5G phones expected to ship in 2022-23.

Processors. More powerful processors mean improved graphics performance. The success of the Nintendo Switch video game console shows that smartphones with high-quality visuals are popular among users. Moreover, modern mobile chips that can support a smartphone's camera, video, audio, gesture recognition, and other functionality have become mainstream, overtaking simple processor design. Smartphones this year will also see built-in 5G connectivity.

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AI TOOL

AI tools refer to software applications or platforms that use artificial intelligence (AI) technologies to perform various tasks. These tools can range from simple chatbots to complex machine learning algorithms that analyze large amounts of data. AI tools can be used in many different industries and applications, such as

healthcare, finance, customer service, and marketing. They can be used for tasks such as automating repetitive processes, analyzing data, and providing personalized recommendations to users. Some common examples of AI tools include natural language processing (NLP) software, which is used to understand and respond to human language; computer vision technology, which can identify and analyze images and videos; and predictive analytics software, which uses machine learning algorithms to analyze data and make predictions.

TensorFlow: It is an open-source library developed by Google that allows developers to build and train machine learning models. TensorFlow can be used for a wide range of tasks such as image and speech recognition, natural language processing, and predictive analytics.

Amazon SageMaker: It is a fully managed machine learning service that enables developers to build, train, and deploy machine learning models at scale. SageMaker provides a range of built- in algorithms and tools for data preparation, model training, and model deployment.

IBM Watson: It is a suite of AI-powered tools and services that can be used for natural language processing, machine learning, computer vision, and other AI applications. Watson includes tools such as Watson Discovery, Watson Assistant, and Watson Studio.

Google Cloud AutoML: It is a suite of machine learning tools that enables developers with limited machine learning expertise to build custom models. AutoML provides tools for image recognition, natural language processing, and predictive analytics.

Hugging Face: It is an open-source library for natural language processing that provides pre- trained models for a wide range of NLP tasks such as text classification, question-answering, and language translation. Hugging Face also provides a platform for developers to share and collaborate on NLP models.

10 top AI tools for Image Editing

- Adobe Photoshop.
- Luminar AI.
- Aurora HDR.

- Object AI.
- RemoveBG.
- Topaz Studio.
- Pixlr X.
- Canva.
- PaintShop Pro
- Lensa

Top 10 AI tools for Education:

1. GRADESCOPE

The Gradescope AI tool enables students to assess each other while providing feedback, which are often time-consuming tasks without AI technology. Gradescope relies on a combination of machine learning (ML) and AI to make it easier to grade, which saves time and energy.

- AI-assisted and manual question grouping
- Student-specific time extensions
- AI-assisted grading
- Increased efficiency and fairness
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2. NUANCE'S DRAGON SPEECH RECOGNITION

Located in Burlington, Massachusetts, Nuance provides speech recognition software that can be used by both students and faculty. The company's Dragon Speech Recognition product can transcribe up to 160 words per minute, helping students who find it difficult to write or type. The tool also supports verbal commands to navigate documents, which is essential for students with accessibility requirements.

Here are some of the main features of Nuance's Dragon:

- Accessibility features supporting verbal commands
- Voice to assess student work
- Dictate class work with 99% accuracy

3. IVY CHATBOT

Ivy is a set of chatbot AI tools that were specifically designed for universities and colleges. They assist in many parts of the university process, such as application forms, enrollment, tuition costs, deadlines, and more. Another unique feature of Ivy is its ability to plan recruitment campaigns through gathered data.

Here are some of the main features of Ivy:

- Live chat and SMS nudging
- Integrations for Facebook, ERP, CRM, and SIS
- Become smarter over time through interaction with users

4. ALTITUDE LEARNING

An online platform for professional learning, Altitude Learning is focused on learner-centered education. Its main goal is to help students teach themselves through a self-learning educational path.

Here are some of the main features of Altitude Learning:
- "Learner-centered" model that enables self-learning
- Student-centered experiences
- Single destination where students and families access curricula, communicate, track student progress, etc.

5. COGNII

Cognii is another Boston-based company that develops AI-based products for K-12 and higher education institutions. It is also deployed in corporate training environments.

One of Cognii's main AI tools is its virtual learning assistant, which relies on conversational technology to help students form open-format responses and improve critical thinking skills. Besides this, the virtual assistant also provides one-on-one tutoring and real-time feedback customized to each student.

- Helps students form open responses
- Provides one-on-one tutoring
- Adaptive personalization for each student.

6. KNOWJI

Another one of the top AI education tools on the market is Knowji, which is an audio- visual vocabulary application that leverages current educational research. Knowji is designed for language learners, and it uses various methods and concepts to help students learn faster.

Here are some of the main features of Knowji:

- Common Core Alignment
- Multiple learning modes
- Customizable and adaptable
- Images and example sentences

7. QUEIRUM

Querium offers an AI platform that helps students master critical STEM skills while preparing them for college and careers. The platform relies on personalized lessons and step-by- step tutoring assistance. The AI virtual tutor has been shown to improve the speed, quality, and analysis of student learning while improving student outcomes.

Here are some of the maine features of Queirum's
AI: Personalized, bite-sized lessons

- Step-by-step tutoring assistance
- Increases student engagement

8. CENTURY TECH

London-based company Century Tech offers an AI platform that utilizes cognitive neuroscience and data analytics to construct personalized learning plans for students. In turn, these personalized plans reduce work for instructors, freeing them up to focus on other areas.

Here are some of the main features of Century:
- Accelerates learning and improves student engagement
- Reduces workload for teachers
- Actionable data insights

9. CARNEGIE LEARNING'S PLATFORMS

Carnegie Learning, an innovative education technology and curriculum solutions provider, relies on AI and machine learning in its learning platforms for high school and college- level students. These platforms offer many unique solutions for the areas of math, literacy, or world languages.

The provider has won multiple educational awards, including "Best Artificial Intelligence/Machine Learning App" in the Tech Edvocate Awards. One of its products, the MATHia software, was created by researchers from Carnegie Mellon University. It also offers Fast ForWord, which is a reading and language software that helps students develop cognitive skills. Here are some of the main features of Carnegie Learning's Platforms:

- Mimics human tutors
- One-on-one personalized learning experience for each student Actionable data to manage students

10. KNEWTON'S ALTA

The last AI tool on our list of "10 Best AI Tools for Education" is Knewton's Alta. The AI tool is the company's newest product for higher education. It is a complete courseware solution that combines adaptive learning technology with openly available content, which helps develop a personalized learning experience for each student. Here are some of the main features of Knewton's Alta:
- Adaptive learning technology
- Personalized learning experiences
- Provides all required content for a course
- Multiple courses

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NANOTECHNOLOGY
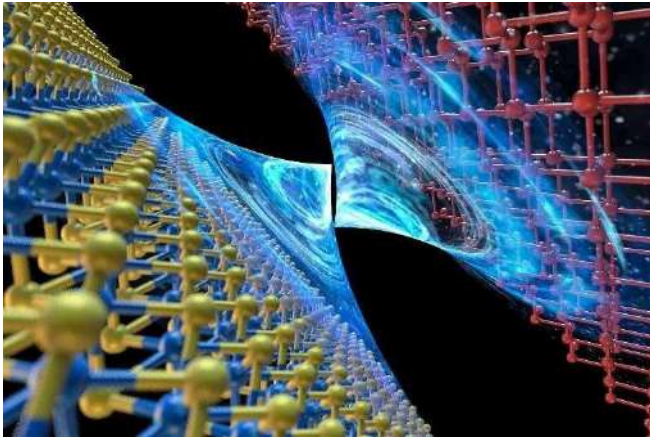
At the interface between the semimetal (bismuth) and the 2D semiconductor (MoS2), there is no energy barrier for the electron to go through, leading to an ultralow contact resistance between them.

Atomically thin materials are a promising alternative to silicon-based transistors; now researchers can connect them more efficiently to other chip elements.

Moore's Law, the famous prediction that the number of transistors that can be packed onto a microchip will double every couple of years, has been bumping into basic physical limits. These limits could bring decades of progress to a halt, unless new approaches are found.

One new direction being explored is the use of atomically thin materials instead of silicon as the basis for new transistors, but connecting those "2D" materials to other conventional electronic components has proved difficult.

Now researchers at MIT, the University of California at Berkeley, the Taiwan Semiconductor Manufacturing Company, and elsewhere have found a new way of making those electrical connections, which could help to unleash the potential of 2D materials and further the miniaturization of components — possibly enough to extend Moore's Law, at least for the near future.
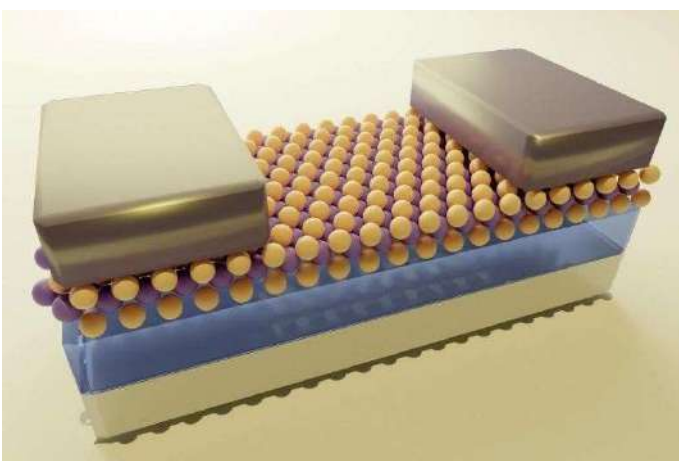
Such ultrathin monolayer materials, in this case molybdenum disulfide, are seen as a major contender for a way around the miniaturization limits now being encountered by silicon-based transistor technology. But creating an efficient, highly conductive interface between such materials and metal conductors, in order to connect them to each other and to other devices and power sources, was a challenge holding back progress toward such solutions.

ASI/T SUDHIR KUMAR

Acknowledgement

We are highly thankful for reading out this compilation and hope it will be useful for you in day to day professional and personal life. We would like to hear your interest areas, suggestions from you to make this newsletter more informative and interesting. Your views will definitely help us to create this newsletter as an effective medium to reach you with latest development in the fields of communication and technology.

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