



SJTU TODAY

New Optical Chip Can Help Advance Generative AI

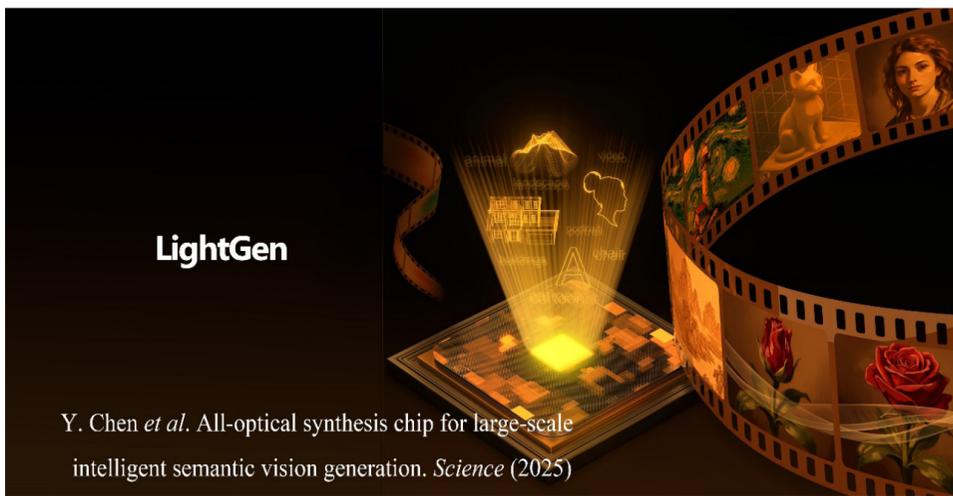
Shanghai Jiao Tong University announced a breakthrough in computing power chips on Friday by introducing LightGen, an all-optical computing chip capable of running large-scale generative artificial intelligence models, which provides insights into addressing the immense computational and energy demands in the generative AI era.

The research team claimed that it is the first time an all-optical computing chip has been developed to support large-scale semantic and visual generative models. A paper about the study was published on the website of the journal *Science* on Friday, where it was highlighted as a featured paper.

Generative AI is increasingly being applied to complex real-world scenarios, such as generating images from text in seconds and creating videos in a matter of moments. As these models grow larger and more sophisticated, the demand for computational power and energy efficiency becomes more pressing. In the post-Moore's law era, global research efforts are shifting towards next-generation computing power chips like optical computing.

Currently, optical chips excel at accelerating discriminative tasks, but fall short of supporting cutting-edge large-scale generative models. The challenge lies in enabling next-generation optical computing chips to run complex generative models, a recognized problem in the field of intelligent computing globally.

Scientists explained that optical computing involves processing information using light instead of electrons within transistors. Light naturally offers



Y. Chen *et al.* All-optical synthesis chip for large-scale intelligent semantic vision generation. *Science* (2025)

high speed and parallelism, making it a promising direction for overcoming computational and energy bottlenecks. However, applying optical computing to generative AI is complex due to the large scale of these models and their need to transform across multiple dimensions.

Chen Yitong, a leading researcher on the team, said that LightGen achieves its performance leap by overcoming three critical bottlenecks: integrating millions of optical neurons on a single chip, achieving all-optical dimensional transformation, and developing a training

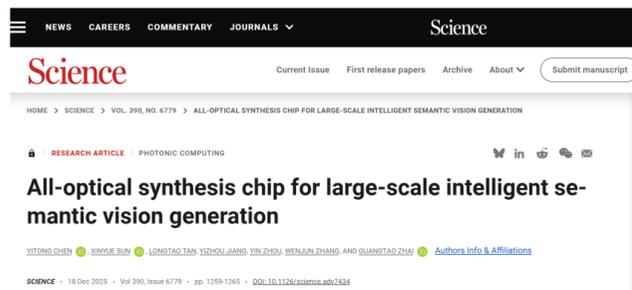
algorithm for optical generative models that does not rely on ground truth.

"Any one of these breakthroughs alone would be deemed significant. LightGen achieves all three simultaneously, enabling an end-to-end, all-optical implementation for large-scale generative tasks," said Chen, who is also an assistant professor at Shanghai Jiao Tong University's School of Integrated Circuits.

LightGen is not merely about using electronics to assist optics in generation. It achieves a complete "input-understanding-semantic manipulation-generation" loop on an all-optical

chip, according to the research team. After an image is fed into the chip, the system can extract and represent semantic information, generating new media data under semantic control, effectively enabling light to "understand" and "cognize" semantics.

Experiments in their research demonstrated that LightGen can perform high-resolution image semantic generation, 3D generation, high-definition video generation, and semantic control, supporting various large-scale generative tasks like denoising and feature transfer.



All-optical synthesis chip for large-scale intelligent semantic vision generation

YITONG CHEN, YIXUE SUN, LONGTAO TAN, YIZHOU JIANG, YIN ZHOU, WENAN ZHANG, AND GUANJIAO ZHAI

In performance evaluations, LightGen adhered to rigorous computational standards. It achieved comparable generation quality to leading electronic neural networks, such as Stable Diffusion and NeRF, while measuring end-to-end time and energy consumption. Tests showed that even using relatively outdated input devices, LightGen achieved computational and energy efficiency improvements of two orders of magnitude compared to top digital chips. With advanced devices, LightGen could theoretically achieve computational power improvements of seven orders of magnitude and energy efficiency im-

provements of eight orders.

The research team said that the study emphasizes that as generative AI becomes more integrated into production and daily life, developing next-generation computing power chips capable of executing cutting-edge tasks required by modern AI society becomes imperative.

"LightGen opens a new path for advancing generative AI with higher speed and efficiency, providing a fresh direction for research into high-speed, energy-efficient generative intelligent computing," said Chen.

(Source: China Daily)

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"Ladder to Creation · The Power of Science" —2025 Ruiyuan Science and Technology Awards Ceremony and SJTU Science Night Held

Brilliant lights and gathered stars illuminated the evening of November 27, as the "Ladder to Creation · The Power of Science" 2025 Ruiyuan Science and Technology Awards

Ceremony and SJTU Science Night was held at the Student Center on the Minhang Campus. The third Ruiyuan Science and Technology Awards and the second Ruiyuan Young Scientist

Awards were presented, honoring five distinguished scientists and eight young scientists.

(Source: Division of Research Management)



School of Design Building Wins International Accolade A Home for Jiaotong Community, World-Class Beauty

On the evening of December 4 (local time), the awards ceremony for 2025 Prix Versailles, under UNESCO and the International Union of Architects (UIA), took place at UNESCO headquarters in Paris, France. The Shanghai Jiao Tong School of Design Building, designed by Professor Ruan Xing, Dean of the School of Design, and his team, stood out and became the only Asian campus building to be listed on the "World's Most Beautiful Campus List 2025". Recognized for its outstanding architectural design and spatial creation, it received the Special Prize for an Interior — one of the three major awards under the Prix Versailles. This also marks the first Chinese university campus building has won any of the three major awards in this category since the prize's inception.

Yu Chaoyang, Member of the Standing Committee of the Party Committee and Head of the Publicity Department



at Shanghai Jiao Tong University, and Ruan Xing — architect of the School of Design Building, Dean of the School of Design, and Guangqi Chair Professor — were invited to attend the ceremony and accepted the award on stage. In his acceptance speech, Ruan Xing expressed sincere gratitude on behalf of Shanghai Jiao Tong University and the design team for this

honor. He stated: On a more serious note, we salute the award organization for the courage to single out beauty in this troubling world that we are living in. Beauty is much needed, for it is the outcome of both ethics and aesthetics.

The award is not only an international recognition of the architectural achievement of the School of Design Building, but also a testament to the

harmonious integration between the building and the campus environment, the contemporary expression of local culture and the commitment to sustainability. Guided by the concept of "Total Design", the School of Design leads campus cultural development by transforming functional spaces into carriers of education.

(Source: School of Design)

Edited by Wang Qi, The Art of Chinese Calligraphy and Painting Has Been Selected for the 2025 "Books on Party Building" List

Recently, *The Art of Chinese Calligraphy and Painting (Chinese-English Bilingual Edition)*, compiled by Professor Wang Qi from the Institute of Humanities and Art and translated by Li Lingyue, and published by Shanghai Jiao Tong University Press, has successfully been included in the list of "Recommended Books on Party Building" for November 2025 released by Party Building Network.

Its inclusion in the list of "Recommended Books on Party Building"

is not only a high recognition of the book's cultural value and innovative philosophy, but also highlights the emphasis placed by Party building-related publications on the inheritance of fine traditional Chinese culture. As a Chinese-English bilingual book, it not only provides domestic readers with a systematic tutorial for learning calligraphy and painting, but also builds a cultural bridge for Chinese traditional art to reach the world.

Professor Wang Qi stated that he

hopes this popular science book will enable more people to appreciate the profound heritage and contemporary vitality of Chinese calligraphy and painting art, and promote the creative transformation and innovative development of traditional art in the digital age. It is reported that the book has become a core textbook for general art courses offered by the School of Humanities and Zhuyuan College of Shanghai Jiao Tong University.

(Source: School of Humanities)



"Swallow" Returns Home — Legendary Film Figure Lu Yan Revisits Her Alma Mater in Shanghai

On December 8, Lu Yan, nearly 100 years old and an alumna of Shanghai Jiao Tong University, returned to her alma mater.

Though age had left its marks and her voice carried the weight of time, Lu Yan remained determined to speak, conveying her deep affection for the land and its people with every heartfelt word.

Lu Yan's autobiography *Return of the Swallow* recounts how, after years of living overseas, she formally entered the world of theater in her thirties with encouragement from her husband. She gradually made her mark in Hollywood films, leaving behind notable performances.

At the exhibition "Coming Home — Selected Archives of Alumna Lu Yan Collected by Shanghai Jiao Tong University," visitors can see a collection of items she donated to her alma mater, reflecting her exchanges with Chinese and international cultural figures across different periods.

"When I see you," Lu Yan said, "it feels as though I am seeing myself eighty years ago—stepping through the gates of Jiaotong University and beginning my own journey as a student." As she presented copies of her autobiography *Return of the Swallow* to students and alumni representatives, she offered heartfelt words to the



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younger generation: "May you study with dedication and strive forward on this fertile ground that is Jiaotong University."

Over the years, Lu Yan has continuously given back to her alma mater. In 1987, she donated funds to build the "Yan Yun Pavilion" on the Minhang Campus of Shanghai Jiao Tong University. To support the development of cultural and arts education, she also established the "Lu Yan Humanities Scholarship" to encourage academically excellent students to pursue their dreams in film and the arts.

(By Chen Xiaoyu, Xu Xiaoqing)

International Visiting Art Scholar Event Kicks off in Shanghai

Hosted by Shanghai Jiao Tong University's USC-SJTU Institute of Cultural and Creative Industry (ICCI), an international visiting art scholar event, part of the eighth ICCI Art Valley, started in Shanghai on Friday, bringing together renowned artists, scholars, and industry leaders from France, Poland, China, and Italy.

The event featured an art exhibition and an academic seminar focusing on cutting-edge topics, including the impact of artificial intelligence-generated content on originality, and strategies for artists balancing local identity with globalization.

Zhang Weimin, dean of the ICCI at SJTU, highlighted that in an era filled with uncertainties, the themes being

examined symbolize an endless spirit of exploration. "Art production is not merely a form of cultural expression," Zhang said. "It is also a key driver of social innovation and economic development."

The exhibition showcased the latest works of the international visiting scholars, which delved into the frontiers of technological ethics, exploring the boundaries between life and non-life, nature and the artificial in the AI era. Also, in some other pieces, artists ingeniously used natural and recycled materials and employed various animal forms to evoke philosophical and emotional connections with the audience.

(Source: China Daily)



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Shaping the Future of Digital Music: ICCI Hosts the IDMIC Awards Ceremony



As China's national digitalization strategy gains momentum, the digital cultural and creative industries are experiencing unprecedented growth. In response, USC-SJTU Institute of Cultural and Creative Industry (ICCI) is actively exploring innovative education practices that integrate digital and intelligent technologies. One such initiative is the International Digital Music Innovation Competition (IDMIC), launched in 2025 by ICCI in collaboration with a host of global partners, including institutions from China, Belgium, and Korea.

Themed *Sound of Dunhuang*, IDMIC 2025 has invited submissions from around the world that merge cultural richness, artistic expression, and technological sophistication. More than a competition, IDMIC aims to foster a globally connected, collaborative ecosystem for digital music innovation while advancing new approaches to interdisciplinary talent development—an ambition that has resonated widely across academic and industry circles.

A Sonic Future Rooted in Heritage
The award ceremony unfolded in

the ICCI's contemporary, gallery-like atrium, bringing together judges, artists, and digital music enthusiasts from the Netherlands, Belgium, Korea, and beyond. The event offered a curated journey through ICCI's most innovative spaces, including demonstrations in the Smart Music and Audio Labs and immersive installations inspired by the Dunhuang Mogao Grottoes and traditional zaojing motifs.

These showcases gave guests a close-up look at how emerging technologies—AI-driven composition, interactive media, and digital sound design—are revitalizing cultural heritage and shaping new musical possibilities. Presented in collaboration with ICCI's interdisciplinary digital humanities labs, the exhibition of IDMIC's winning works enabled visitors to experience pioneering creative outputs while gaining direct insight into how digital innovation is transforming artistic expression and redefining the future of cultural creativity.

Dr. Qiongyan CHAI, a judge from the Bard College Conservatory of Music and newly appointed Vice Chair of the IDMIC 2026 Organizing

Committee, shared her remarks at the ceremony. She praised the competition's artistic ambition and international vision, and announced that Bard College will officially join the organizing team next year—further expanding IDMIC's global network and its commitment to identifying outstanding creative talent worldwide.

Nurturing Future Innovators Through Education, Industry, and Research Collaboration

Since its founding, ICCI has embraced an educational philosophy grounded in internationalization, interdisciplinary integration, and industry relevance. Digital music, as a core component of ICCI's digital creativity curriculum, plays a strategic role in advancing academic innovation and fostering hybrid talent capable of operating across cultural and technological domains.

In this year's competition, ICCI's student project *Melodic Zaojing* stood out for its creative synthesis of traditional zaojing visual rhythms and Eastern philosophical thought with contemporary electronic music and

interactive art. The work explores the interplay between stillness and movement, form and sound, earning recognition in the Music Technology and New Media Art category (Track C). Its success highlights ICCI's strength in cultivating talent at the intersection of technology and the arts.

Beyond technical training, ICCI emphasizes developing students' all-round professional abilities. This year's IDMIC was organized entirely by a student-led committee, with graduate students managing planning, outreach, jury coordination, and on-site operations. Through this experience, they gained practical insight into international event management and strengthened their global awareness and communication skills.

At the ceremony, Dean Weimin ZHANG and Deputy Secretary Heshan CHANG presented certificates to the student organizers, encouraging them to continue contributing creativity and leadership to the digital music community. Beyond technical training, ICCI emphasizes developing students' all-round professional abilities. This year's IDMIC was organized entirely by a student-led committee, with graduate students managing planning, outreach, jury coordination, and on-site operations. Through this experience, they gained practical insight into international event management and strengthened their global awareness and communication skills.

Looking ahead, IDMIC will continue uniting academic, industry, and research partners to build inclusive digital music experiences that transcend age, profession, and geography—shaping a forward-looking and continuously evolving ecosystem for digital music innovation.

(Source: ICCI)

Sino-Foreign Students Choir on the Stage of "9th December" Teacher-Students Choir Concert of Shanghai Jiao Tong University



To commemorate the 90th anniversary of the "December 9th" Patriotic Student Movement, the 80th anniversary of the victory of the World Anti-Fascist War, and the 100th anniversary of the founding of SJTU's first CPC Party Branch, while encouraging teachers and students to remember history and welcome the university's upcoming 130th anniversary with a progressive spirit, the 2025 "December 9th" Teachers and Students Choir Concert of Shanghai Jiao Tong University (SJTU) was held at the Fok Ying Tung Sports Center.

Yang Zhenbin, Secretary of the Party Committee of the University; Gu Feng, Deputy Director of the University Council; Wang Houji, Member of the Standing Committee of the Party Committee of the University and Minister of the United Front Work Department; as well as leaders from relevant departments and schools attended the event, including Wu Chao, Secretary-General of the Student Affairs Guidance Committee and Director of the Student Affairs Office; Yin Haitao, Division Director of the Division of Global Cooperation and Exchange; Chang Hui, Vice Dean of the Graduate School; and Chen Xianfeng, Executive Deputy Director of the Party Committee of the University's Office of Faculty Affairs, together with teachers and students.

Amid intertwined lights and stirring melodies, a Chinese and International Student Choir composed of 60 students from over ten countries, including Russia, Egypt, and South Korea, performed the classic song *I Love You China* with deep emotion in both Chinese and English. The performance was joined by Yin Haitao, Division Director of the Division of Global Cooperation and Exchange; Chang Hui, Vice Dean of the Graduate School; Zhao Feng,

Director of the Internationalization Office of the Graduate School; Liu Jian, Director of the Global Communication Office; and teacher representatives from relevant internationalization departments of the University.

This harmony transcending cultures and languages conveyed the youth's heartfelt blessings for the motherland and tribute to the times. Voices from around the world came together, vividly reflecting SJTU's open and inclusive campus atmosphere and transforming the idea of "shared youth and shared future" into one of the most touching moments of the evening.

Performance Highlights

Through firm yet affectionate singing, Chinese and international teachers and students expressed their shared emotional resonance. The bilingual arrangement infused the classic melody with renewed artistic vitality amid the encounter of Eastern and Western cultures. With its outstanding stage presence and distinctive cross-cultural appeal, the choir received the "Special Contribution Award" at this year's concert.

Practice Recap

Since the joint choir was formed in November, its members have taken part in dozens of rehearsals over more than a month. Throughout the process, teachers and students worked closely to refine pronunciation, vocal coordination, and emotional expression. In jointly overcoming differences in language, rhythm, and musical style, members from diverse cultural backgrounds deepened their understanding of Chinese musical culture while forging lasting cross-border friendships.

(Source: International Student Service Center)

JUN WEI LIM: Bridging Cultures, Connecting Worlds

The recipients of the 2025 Shanghai Jiao Tong University Student of the Year have been officially announced. Following a rigorous process of faculty nomination, public voting, committee review, and final presentation, JUN WEI LIM, an undergraduate from the Antai College of Economics & Management (Class of 2023), stood out among his peers and earned this prestigious honor.

Currently serving as Director of the Cross-Cultural Center of the International Student Service Center, Director of the International Student Center, and President of the Antai International Student Union, JUN WEI LIM has been deeply engaged in advancing campus internationalization and fostering meaningful interaction between Chinese and international students. He has organized over 60 cross-cultural initiatives spanning arts, academics, public service, and cultural exchange, engaging thousands of participants and enhancing SJTU's global visibility.

His signature initiatives including the Blending Brilliance Cross-Cultural Talent Competition and the SJTUer's Day International Cultural Fair have transformed cultural diversity into lived experience. Through music, language, movement, and storytelling, these platforms turned difference into dialogue and mutual understanding.

"Cross-cultural exchange is not



the contrast of differences, but the starting point of understanding," JUN WEI LIM often reflects. In his view, culture finds its value not in exhibition, but in resonance not in juxtaposition, but in connection.

Beyond large-scale events, he has worked to embed cultural exchange into daily campus life. Programs such as *Running@SJTU*, *CityRun*, and *Global Chat Over Lunch* created relaxed spaces where Chinese and international students could connect organically, making cultural understanding part of everyday experience.

Under his leadership, the SJTU Cross-Cultural Center evolved into a structured and internationalized team, now recognized as a key platform for youth co-creation and intercultural dialogue. He believes cross-cultural exchange is most meaningful when it enables collec-

tive growth.

A recipient of the Shanghai Government Scholarship (First Class) and the Bai Xian Asian Future Leaders Scholarship, JUN WEI LIM has represented SJTU at international forums, including the World Youth Development Forum, engaging with young leaders from over one hundred countries on global governance and civilizational dialogue.

In 2025, he launched the *Silken Lineage: Southern Visions* Southeast Asian Cultural Showcase, inviting multiple Southeast Asian consulates to SJTU and marking the first formal campus visit by the Consulate General of Malaysia in Shanghai. The event reflected his belief in youth-led people-to-people diplomacy.

As a Malaysian student at SJTU, JUN WEI LIM regards himself as a "bridge across Nanyang,"



committed to fostering two-way understanding between China and Southeast Asia. During the China-Czech Global Challenge Program, he centered Chinese culture in discussions on brand globalization and cross-cultural management, sharing China's story through dialogue grounded in authenticity and respect.

Whether on campus or on the global stage, JUN WEI LIM continues to translate cultural confidence into action. He believes cultural inheritance is a living resonance shaped through participation and responsibility, and remains committed to fostering understanding through action and connection allowing the voice of SJTU and the strength of youth to be heard by the world.

(Sources: International Student Service Center)