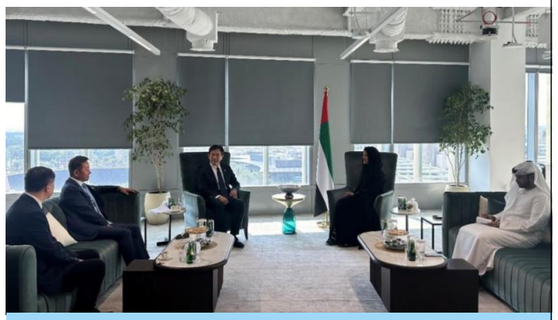
TSINGHUA NEWSLETTER

2025 ISSUE 1

CONTENTS

FOCUS



GLOBAL ENGAGEMENT

RESEARCH

TSINGHUA COMMUNITY

DIVERSE CAMPUS

FOCUS

TSINGHUA NEWSLETTER

Qiu Yong visits Vietnam, deepens university ties

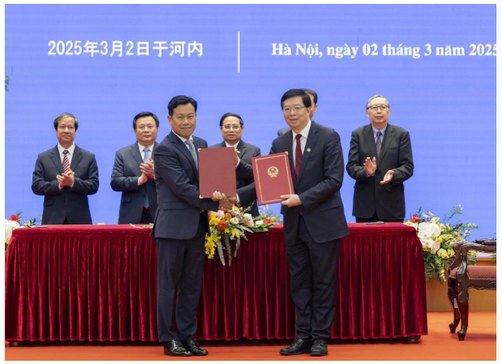
This year marks the 75th anniversary of the establishment of diplomatic relations between China and Vietnam, as well as the China-Vietnam Year of People-to-People Exchanges. From February 28 to March 2, a delegation led by Qiu Yong, secretary of the CPC Tsinghua University Committee, visited Vietnam.

This visit aimed to implement the important consensus reached by the top leaders of the two parties and countries, promote cooperation in education, science, and technology, as well as cultural exchanges between Tsinghua University and Vietnam, and contribute to building a strategically significant China-Vietnam community with a shared future.

On March 2, Vietnamese Prime Minister Pham Minh Chinh met with Qiu Yong and his delegation in Hanoi and witnessed the signing of agreements between Tsinghua University and Vietnam National University, Hanoi; Vietnam National University, Ho Chi Minh City; and National Economics University.

The event was attended by Nguyen Xuan Thang, member of the Politburo of the CPV Central Committee, president of the Ho Chi Minh National Academy of Politics and chairman of the Central Theoretical Council; Le Hoai Trung, secretary of the Secretariat of the Communist Party of Vietnam and chairman of the Party Central Committee Office; Vietnamese Deputy Prime Ministers Tran Hong Ha, Le Thanh Long, Ho Duc Phoc, Bui Thanh Son, and Nguyen Chi Dung; Minister-Chairman of the Government Office Tran Van Son; Minister of Education and Training Nguyen Kim Son; Secretary of Quang Ninh Provincial Party Committee Vu Dai Thang; Chinese Ambassador to Vietnam He Wei;

Pham Minh Chinh meets with Qiu Yong and his delegation.



Tsinghua University signs a student exchange agreement with Vietnam National University, Hanoi.

and Chen Lai, a Distinguished Professor of Arts, Humanities and Social Sciences and also Dean of the Academy of Chinese Learning at Tsinghua University.

Pham Minh Chinh emphasized that Vietnam consistently regards the development of Vietnam-China relations as a strategic choice and top priority in its foreign policy, highlighting the special "comrades-plus-brothers" bond between the two parties and countries. He acknowledged Tsinghua University as a renowned top-tier institution in China and globally, which has cultivated numerous talents and made significant contributions to national scientific and technological advancements, as well as socio-economic development. Currently, as Vietnam accelerates its technological innovation and national digital transformation, high-quality human resources are a decisive factor. The Prime Minister expressed hope that Tsinghua University would share its educational experiences with Vietnam's academic community, foster more talents for the development of bilateral relations, build additional bridges of cooperation, and make greater contributions to the prosperity of socialist construction endeavors.

Qiu Yong stated that both China and Vietnam have a long-standing tradition of valuing education and firmly believe that education—especially higher education—plays a crucial role in their national development strategies. Tsinghua University has maintained a long-term, friendly cooperative relationship with Vietnam's education community, and an increasing number of outstanding Vietnamese students are coming to Tsinghua to study, aspiring to become bearers of the enduring friendship between the two countries. Tsinghua University looks forward to strengthening cooperation with Vietnamese higher education institutions in areas such as talent development

Tsinghua University signs a Memorandum of Understanding with Vietnam National University, Ho Chi Minh City.

Tsinghua University signs a Memorandum of Understanding with National Economics University.

Qiu Yong presents a keynote address.

and technological innovation, continuously enhancing mutual understanding and friendship among young people from both nations, and further advancing bilateral relations.

In the presence of guests from both sides, Qiu Yong signed cooperation agreements with Vietnam National University, Hanoi, Vietnam National University, Ho Chi Minh City, and National Economics University.

On March 1st, Tsinghua and Vietnam National University, Hanoi held the "Vietnam-China Higher Education Seminar: Opportunities and Challenges in the 21st Century – Digital Intelligence Era". This event marked another practical step in implementing several cooperative achievements reached since the Tsinghua University delegation visited Vietnam last year.

Nguyen Xuan Thang, He Wei, and Vietnam National University, Hanoi President Le Quan delivered speeches at the seminar. Qiu Yong presented a keynote address titled "Innovation and Development of Higher Education in the 21st Century".

Experts and scholars from both China and Vietnam engaged in discussions on topics including the empowerment of educational development and research innovation through artificial intelligence, the new mission of higher education in the intelligent era, the application of large model technology in teaching scenarios, and the core concepts of Confucian educational philosophy.

In his report, Qiu Yong used detailed data and numerous case studies to illustrate both the evolution of higher education in China and Tsinghua University's journey in building a world-class institution and advancing its global strategy. He stated that Tsinghua's journey reflects the broader evolution of Chinese higher education—growing from humble beginnings to a position of

Qiu Yong exchanges views with Nguyen Xuan Thang.

strength—under the leadership of the Communist Party of China.

Before the seminar, Qiu Yong exchanged views with Nguyen Xuan Thang. Both sides explored ways to strengthen exchanges in education, science and technology, and culture, aiming to continuously inject fresh vitality into the development of bilateral relations.

In recent years, Tsinghua's reputation and influence have steadily increased, a success attributable not only to the significant overall progress of Chinese higher education but also to Tsinghua's mission-driven comprehensive reforms and its proactive approach to seizing development opportunities. With an eye toward building a leading country in education and better serving the country's major strategic needs and socio-economic development, Tsinghua University is deepening comprehensive reforms and expanding high-level international engagement in education.

During his stay in Vietnam, Qiu Yong was invited to give a special address to all staff at the Chinese Embassy in Vietnam. Qiu's address described how the economic and social development landscape is filled with both challenges and opportunities, and how Tsinghua University has steadfastly upheld and strengthened the comprehensive leadership of the Communist Party of China. He explained that with increased confidence and composure, the University has coordinated and advanced reforms in the systems and mechanisms governing education, science and technology, and talent development, with high-quality Party building serving as the driving force behind high-quality development.

Qiu Yong gave a special address at the Chinese Embassy in Vietnam.

Li Luming visits Switzerland to promote multilateral cooperation

From January 20 to 21, Tsinghua President Li Luming attended the World Economic Forum (WEF) Annual Meeting 2025 in Davos. He also attended the Global University Leaders Forum, the Board Meeting 2024-2025 of the Global Alliance of Universities on Climate (GAUC). Li and his delegation held a series of bilateral and multilateral meetings with representatives from various sectors, further deepening international exchange and cooperation.

On January 21, Li held a multilateral meeting with Klaus Schwab, founder of the World Economic Forum, and presidents of leading global universities. Li stated that Tsinghua University is committed to exploring a more open, integrated, and resilient development path for higher education. He emphasized that Tsinghua aims to leverage the World Economic Forum as a pivotal international multilateral dialogue platform to work alongside global partners in contributing wisdom and strength towards actively addressing global challenges and building a community with a shared future for mankind.

The same day, Li was invited to attend the Global University Leaders Forum at the World Economic Forum. He had discussions with leaders from renowned universities and research institutions, including the University of Oxford, ETH Zurich, the National University of Singapore, the University of Chicago, the University of Tokyo, University College London, the Massachusetts Institute of Technology, and Carnegie Mellon University. The discussions centered on how higher education can address global sustainable development challenges by fostering scientific research and innovation. He also attended an event themed "Trust and Cooperation: A New Chapter in Globalization." There, he delivered a speech on the topic of how artificial intelligence is reshaping higher education.

The Board Meeting 2024-2025 of the Global Alliance of Universities on Climate (GAUC)

Li Luming meets Deep Saini, President and Vice-Chancellor of McGill University.

Li also attended Board Meeting 2024-2025 of the Global Alliance of Universities on Climate (GAUC). Leaders and senior representatives from universities across nine countries on six continents gathered both in person and online. Professor Chen Deliang, Xinghua Distinguished Chair Professor of Tsinghua University and a globally acclaimed climate scientist, delivered an academic report. Participants reviewed the achievements made by the alliance since its establishment and exchanged views on the high-level planning for the next phase of the alliance's development.

During his visit to the WEF, Li met with Stephen Schwarzman, Chairman, CEO and Co-Founder of Blackstone. The two sides reviewed the fruitful achievements of their past collaborations and held in-depth discussions on the future development of Schwarzman College. Li expressed his gratitude to Schwarzman for his long-standing support of the college and its work in talent cultivation and promoting educational cooperation between China and the United States. He stated that the University would continue to fully support the college's development and cultivate more leaders of the future. Schwarzman noted that the college's accomplishments are thanks to Tsinghua University's strong support and the relentless efforts of all faculty and staff. Moving forward, Blackstone will join hands with Tsinghua University to support the development and talent cultivation efforts of Schwarzman College, contributing to global prosperity and progress.

During his visit, Li also met with academic representatives including Michael Spence, President & Provost of University College London; Anna Fontcuberta i Morral, President of the École polytechnique fédérale de Lausanne; Joël Mesot, President of ETH Zurich; Deep Saini, President and Vice-Chancellor of McGill University; and Victor Dzau, President of the US National Academy of Medicine. They discussed Tsinghua University's initiatives in AI-enabled education and medical development, and exchanged views on strengthening cooperation in talent cultivation and scientific research.

Li Luming meets Victor J.Dzau, President of the President of the US National Academy of Medicine.

Li Luming meets Marc Pictet, Managing Partner of the Pictet Group.

Alumni in Switzerland

During his visit, bilateral meetings were held with Jakob Stausholm, CEO of Rio Tinto Group; Marc Pictet, Managing Partner of the Pictet Group; and Cherie Nursalim, Co-Founder of the United in Diversity Public Welfare Foundation and Vice Chairman of Giti Group. Li emphasized that Tsinghua University highly values cooperation and dialogue with international partners and is willing to strengthen collaboration with all parties to promote sustainable technological innovation and practical applications in the AI era. Collaborative partners expressed their willingness to continue deepening practical cooperation with Tsinghua University, working together to address global challenges and promote the development of society.

During the visit, Li held a symposium with alumni working and studying in Switzerland. Li provided an update on the recent developments and reform initiatives at the University, expressing gratitude for the alumni's continued interest and support for the University's endeavors, as well as their contributions to fostering exchanges between China and the West in their respective roles. The alumni affirmed their commitment to leveraging their connections to uphold and promote the Tsinghua spirit, striving to contribute to the development of both their homeland and their alma mater.

AADTHU design team reveals story behind Asian Winter Games' lilac-shaped cauldron and more

Designers from the Academy of Arts & Design, Tsinghua University – the team behind the Asian Winter Games' cauldron, emblem, mascots and more – shared their design process and the meaning behind their creations.

Amid ice and snow, a blazing flame atop a newly unveiled cauldron marked the opening of the 9th Asian Winter Games in Harbin, Heilongjiang province, on Feb. 7.

The torch tower was designed by teachers and students from the Academy of Arts & Design, Tsinghua University (AADTHU). The structure, a new landmark at the Harbin Ice and Snow World Park on Sun Island, now stands as a testament to months of dedication.

Dean Ma Sai and Professor Fan Yinliang of the Department of Industrial Design described the cauldron as a source of pride, embodying creativity and conveying meaningful stories.

"The time was very tight; we had to submit the design within a couple of weeks," Ma recalled of the phone call he received from the Harbin Asian Winter Games Organizing Committee in mid-August. The committee invited the academy to participate in the main cauldron design tender, with submissions due by Aug. 31, 2024. Since it was summer vacation, Ma urgently convened video meetings with teachers and students scattered in various locations, and a team from the Department of Industrial Design began the project."

Guided by Professor Fan, a team of more than a dozen teachers and students quickly gathered information and elements related to the Asian Winter Games and Harbin's culture. Meeting nightly to brainstorm, they produced 10 detailed proposals within weeks.

The lilac-shaped cauldron plan, centered on Harbin's city flower, stood out from the proposals submitted by 12 bidding entities and won the competition on Sept. 24, 2024. The organizing committee approved the proposal on Oct. 2, and detailed design work began soon after.

The design of the cauldron skillfully integrates regional culture with ice and snow sports to represent key themes of the Games. The lilac, with its resilient and elegant temperament, perfectly

embodies the unyielding spirit of the people of Harbin. The crystalline snowflake, a symbol of Harbin as the "Ice City," represents purity, peace and passion for winter sports.

A hexagonal snowflake design forms the torch tower's base, which rises 28.55 meters to a three-dimensional, five-petal lilac blossom. The flowing lines create an elegant appearance.

"Lilacs usually have four petals, while five-petal lilacs are very rare and thus seen as a symbol of luck," Ma explained. "From above, the lilac and snowflake create a concentric blooming effect, aligning with the Asian Winter Games slogan: 'Dream of Winter, Love among Asia.'"

At the top, a vivid Chinese red "pistil" serves as the finishing touch, composed of 56 gas nozzles symbolizing China's 56 ethnic groups. Surrounding the nozzles are vertical ridges symbolizing the spirit of unity and moving forward together. When lit, flames cascade through the hollow lilac petals, creating a warm glow.

Completing the design was only the first step; the real challenge was translating it into reality. To ensure a flawless opening ceremony, the cauldron had to be delivered and rehearsals started by the end of December 2024. In less than three months, the team overcame numerous challenges.

Achieving a perfect transition from the snowflake design at the base to the lilac blossom at the top of the torch tower 's outer surface was a major challenge, Fan said. The team had to carefully consider the torch tower's structure, the construction process, the materials used, and how much weight it could support.

He explained that the narrowest part of the torch tower was initially designed to be 1.3 meters wide, but manufacturing limitations meant they could only make the outer surface and central support 1.5 meters wide.

"For us, those 20 centimeters were crucial. It had to be narrowed; otherwise, the entire torch tower would be deformed," explained Fan.

To solve this, the team experimented repeatedly and found ways to compress the design. Eventually, they reduced the width of the outer surface to 1.26 meters, even narrower than the original plan, making the approximately 80-ton torch tower appear more lightweight and graceful.

The snowflake-shaped base also presented construction challenges. "Each petal of the snowflake has a diameter of more than 10 meters, and no material could cover such a large surface," Fan said. The team struggled to find a suitable cutting method, as various angles would disrupt the aesthetics. After deliberation, Fan suggested making the cut seams resemble snowflake patterns. The creative solution transformed a disadvantage — more than 7,000 small snowflakes were pieced together to form one giant snowflake, creating a vision of swirling snow in the skirt.

With the torch tower intended as a permanent fixture in the Sun Island Scenic Area, the team planned for long-term maintenance by including a recessed space under the base. "After the Games, we will redesign it, potentially turning it into a light sculpture," Fan said. The torch tower is illuminated by more than 20,000 LED lights that can display various patterns – such as snowmen and countdowns – in a range of colors from blue to purple to red.

"If I had to summarize the entire design of the torch tower in two words, I would choose 'art' and 'science,'" Fan said. The design team approached every aspect – from steel structures to lighting – with a rigorous scientific approach, closely cooperating with construction units to overcome technical challenges and realize their artistic vision, Fan explained.

In addition to the cauldron, the academy also undertook multiple design tasks for the Asian Winter Games. A team from the Department of Visual Communication Design, led by chair Professor Chen Lei, designed the emblem and tiger mascots — "Binbin" and "Nini" — for the event.

The emblem, "Breakthrough," combines short track speed skaters, Harbin's lilac and dancing ribbons into a design that blends Chinese culture with Olympic elements. The emblem symbolizes China's ambitions for sports development, its pursuit of greater achievements, and its commitment to growing Asian winter sports.

The emblem's dynamic skaters reflect the dedication of Asian athletes, highlighting Harbin's status as an "Olympic champion city." Blooming lilacs represent the city's welcoming culture, while festive ribbons look to the past and future, with the sun icon symbolizing Asian unity and aspirations.

The main colors, blue and purple, mimic the refraction of light on ice, capturing the allure of winter sports. The purple gradient echoes the lilac's hue, and the emblem's lines suggest the Chinese character for " 九 (Nine)," marking the 9th Asian Winter Games. The external lines form a stylized Chinese character for " 合 (Harmony)," expressing a desire for cooperation among Asian nations.

The mascots "Binbin" and "Nini," two northeast tigers, embody Harbin's sports and culture as host of the 2025 Asian Winter Games. "Binbin"

represents ice sports with winter attire, red scarves, blue gloves and ice skates, while "Nini" symbolizes snow sports in a red jacket with a fur collar and snowboard. Their names — "Binbin," referencing Harbin, and "Nini," meaning "you" in Chinese — welcome visitors.

Inspired by tigers from Heilongjiang's Northeast Tiger Forest Park, their designs incorporate northern Chinese elements like cloth tiger toys and Fangzheng papercutting, reflecting the region's winter culture. Details such as the "king" tiger pattern, snowflake decorations and lilac-patterned gloves highlight Harbin's cultural pride and promote Chinese culture."

Chen's team also designed the Asian Winter Games' color system, core graphics, and sports pictograms. The "Romantic Dreams" color system features hues such as "Crystal Blue," "Lilac Purple," "Range Green," and "Harvest Yellow," and is used for sports icons, urban ambiance and product development.

Inspired by Harbin's ice and snow culture, the core graphics named "A Timely Snow," which derives from the old Chinese saying "A timely snow promises a good harvest" incorporate motifs like the Songhua River, Harbin Grand Theater, snowflakes and frost patterns, using abstract visual language to portray Harbin's identity as the "City of Ice and Snow," "City of Music" and "Olympic Champion City." Following the visual style of the "Breakthrough" emblem, the sports pictograms include 16 designs that represent various sports, reflecting strength, elegance and passion.

Additionally, a team led by Associate Professor Wang Xiaoxin from the Department of Arts and Crafts saw five proposals make the top 10 and two proposals make the top five in the Asian Winter Games medal design competition.

"AADTHU has a tradition of emphasizing both theory and practice, using projects to drive teaching and research, which is a distinctive feature of our educational approach," explained Ma.

"Since its establishment, AADTHU has participated in many significant projects, including design work for numerous national and international sporting events such as the Olympics. Participation in major projects like the Asian Winter Games not only enhances students' professional skills but also develops their communication and coordination skills, which are extraordinarily meaningful for their growth," he said.

Professor Ma's team also designed the 2010 Guangzhou Asian Games cauldron, the "Red Ribbons" sculpture and 11 parade floats on Tiananmen Square in 2019, and the 2022 Beijing Winter Olympics torch stands.

Ma added that designing for large sporting events has laid a foundation for the academy and reflects its role in "using beauty as a medium to enhance international cultural exchanges."

GLOBAL ENGAGEMENT

TSINGHUA NEWSLETTER

Li Luming leads delegation to UAE

Tsinghua University President Li Luming led a delegation to the United Arab Emirates (UAE) from January 14 to 15. The delegation visited Dubai and Abu Dhabi, and held meetings with various sectors to promote the expansion of collaboration between the University and the UAE in the fields of education, research and talent development.

Li met with H.H. Sheikh Khaled bin Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, on January 15. Following an introduction to Tsinghua's reform and development, Li emphasized that "openness" is a distinct feature of China's path to modernization. Tsinghua is committed to expanding high-quality educational exchanges, with a special focus on its cooperation with the UAE, which has yielded notable achievements. He expressed hope to deepen cooperation further, taking the 40th anniversary of the establishment of diplomatic ties between China and the UAE as a new starting point, and contribute to elevating the China-UAE comprehensive strategic partnership to new heights.

The Crown Prince welcomed Li and his delegation, expressing his admiration for the achievements of

Li Luming meets with H.H. Sheikh Khaled bin Mohamed bin Zayed Al Nahyan.

Li Luming meets with Khaldoon Khalifa Al Mubarak.

bilateral ties, with higher education being a key collaboration area. He expressed optimism that the partnership would bring long-term benefits to the people of both countries.

On the same day, Li also met with Rima Al Mokarrab, the executive director of the Strategic Affairs Unit of the Executive Affairs Authority, for further discussions on deepening cooperation.

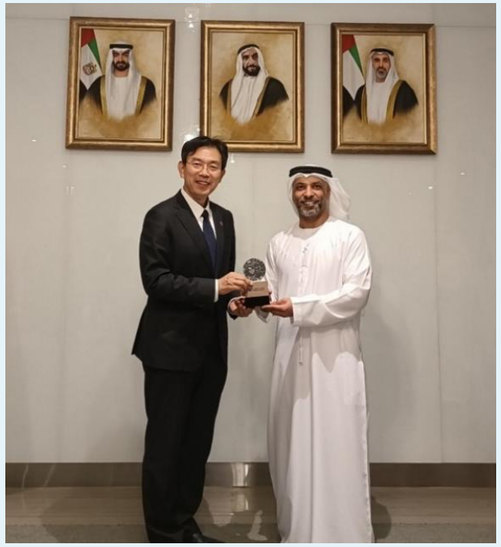
Li met with Reem Bint Ebrahim Al Hashimy, the UAE's minister of state for international cooperation, on January 14. Li introduced Tsinghua's recent global strategy initiatives, emphasizing the University's commitment to strengthening practical cooperation with the UAE and contributing to the shared prosperity and high-quality development of higher education in both countries. Reem, who recalled her time studying at Tsinghua University, expressed her full support for the deepening of cooperation between Tsinghua and the UAE, and looked forward to fruitful results from their collaboration.

On the same day, Li also met with Ebrahim Saeed Al Hajri, president of Khalifa University, and attended the Tsinghua-Khalifa University Joint Workshop on Matter, Energy, Safety and Health, MESH, co-organized by Tsinghua's Department of Engineering Physics and Khalifa University's College

Tsinghua. He conveyed UAE's support for extensive cooperation between the country's various sectors and Tsinghua, hoping this collaboration will lead to even greater outcomes. He also expressed willingness to visit Tsinghua in the future.

Later that afternoon, Li met with Khaldoon Khalifa Al Mubarak, UAE presidential special envoy to China, as well as chief executive officer and managing director of Mubadala Investment Company. Li emphasized that, under the guidance of the China-UAE comprehensive strategic partnership, Tsinghua and UAE universities have made significant strides in areas like talent development and scientific research. He said he hoped both sides would continue to advance cooperation and generate more fruitful outcomes. Khaldoon recalled his visit to Tsinghua and emphasized that the UAE views its relationship with China as one of its most important

Li Luming meets with Reem Bint Ebrahim Al Hashimy.



Li Luming meets with Ebrahim Saeed Al Hajri.

of Engineering and Physical Sciences. Li praised the successful collaboration between Tsinghua and Khalifa University in talent development and scientific research, and hoped the two institutions would continue to strengthen exchanges and contribute to addressing global challenges through enhanced educational and research partnerships. Ebrahim said he looked forward to further cooperation in areas such as student and faculty exchanges, research collaboration and the commercialization of research outcomes.

During his visit, Li also visited the Chinese Embassy in the UAE, where he met with Ambassador Zhang Yiming to discuss the further development of China-UAE higher education cooperation. He also met with Fabio Piano, vice chancellor of New York University Abu Dhabi, to exchange ideas on education, teaching and research innovations. In addition, Li attended the inauguration of the Tsinghua Alumni Association of the UAE, conveying congratulations and hope that alumni in the UAE will continue to contribute to China-UAE cooperation and global development.

Li Luming attends the inauguration of Tsinghua Alumni Association of the UAE.

Li Luming leads delegation to Germany, promoting practical cooperation

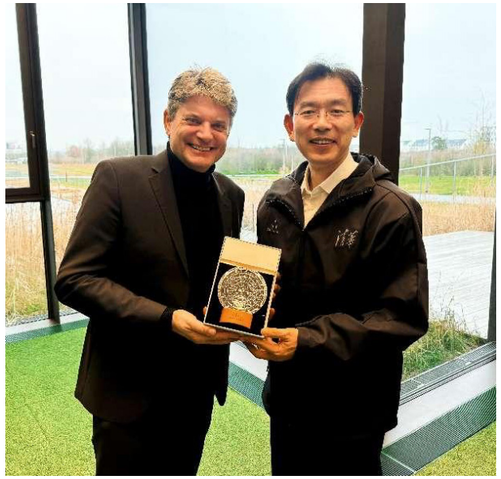
Li Luming meets with Thomas Hofmann.

From January 17 to 18, Tsinghua President Li Luming led a delegation to Germany, where he met with the presidents of the Technical University of Munich (TUM) and the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) to discuss innovative models for the development of higher education and strengthen university cooperation. He also visited the Adidas headquarters, and held a meeting with alumni in Munich.

On January 17, Li visited TUM, where he met with President Thomas Hofmann. The pair discussed topics such as leveraging artificial intelligence to empower education, exploring new pathways for clinical medicine development, and innovative models for advancing higher education.

Li introduced Tsinghua's latest advancements in scientific research, talent cultivation and international cooperation. He noted that since the establishment of the flagship partnership between TUM and Tsinghua, the two institutions have continuously expanded cooperation areas and innovated cooperation models, yielding fruitful results. He expressed hope for further deepening exchanges and collaboration in areas such as medical-engineering integration, carbon neutrality and energy transformation, to jointly address global challenges and contribute the wisdom of higher education to sustainable development and human well-being.

Hofmann welcomed Li and his delegation and introduced the latest developments at TUM in scientific research, talent cultivation, and clinical medicine. He said that, in light of the current trend of interdisciplinary development and symbiosis, he looks forward to further expanding the space



Li Luming meets with Joachim Hornegger.

for innovative cooperation between the two institutions, working together to contribute the strength of Chinese and German universities to the development of higher education.

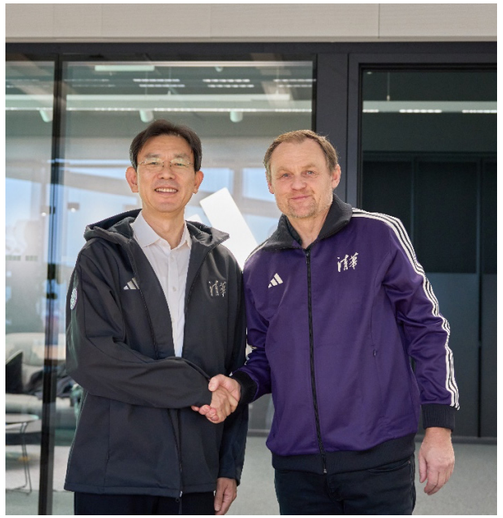
Li and the delegation also visited the Institute for Thermodynamics and its laboratories at TUM's Garching campus, where they met and exchanged ideas with the head of the institute.

On January 17, Li also met with Joachim Hornegger, president of the FAU. The two engaged in discussions on practical cooperation in areas such as medicine, carbon neutrality, and sustainable business practices.

Li stated that with the joint support and efforts of all parties, Tsinghua and the FAU have carried out close cooperation in cutting-edge medical technology research, as well as the integration of basic medicine and clinical applications, achieving positive results. He hopes that both sides continue to deepen and refine specific cooperation measures in areas such as joint research, talent cultivation, and industry transformation, and jointly provide transformative solutions to address global health challenges.

Hornegger stated that the FAU places great importance on its cooperation with Tsinghua University. He looks forward to continuing close collaboration with Tsinghua in the fields of medical engineering and digital health, with the support of industry partners, as well as expanding exchanges in the energy sector and sustainable innovation and entrepreneurship, to jointly promote academic excellence and social progress.

On the same day, Li visited the Adidas headquarters and met with Adidas CEO Bjørn Gulden. Li expressed his gratitude to Gulden, who serves as the "Honorary Coach" of the Tsinghua University football team, for his support of Tsinghua's sports development. He recalled Gulden's visit to Tsinghua last year, during which he interacted with the University's football team and delivered an inspiring lecture. Li highlighted Tsinghua's strong sports tradition and expressed hope for future collaboration in scientific research and student sports practices. He emphasized the importance of exploring innovative approaches and working together to contribute to the high-quality development of sports in China.



Li Luming visits Adidas headquarters.

Alumni in Germany

Gulden welcomed Li and his delegation and introduced the development and management model of the Adidas headquarters. He emphasized that sports not only strengthen physical fitness but also foster team spirit. Gulden noted that Adidas values sports innovation and the cultivation of specialized sports talent and expressed the company's willingness to work with Tsinghua University to make positive contributions to the development of sports in China.

On January 18, Li and his delegation held a discussion with Tsinghua alumni living and working in Germany. Li briefed them on the University's efforts to study and implement the spirit of the third plenary session of the 20th CPC Central Committee and advance comprehensive reform. He expressed his gratitude to the alumni for their ongoing care and support of the University, urging them to continue embodying the Tsinghua spirit in their respective fields and contributing to the advancing the great rejuvenation of the Chinese nation on all fronts through a Chinese path to modernization.

During the visit, Li and his delegation engaged in discussions with faculty and students from the School of Vehicle and Mobility who were attending an overseas social practice program. Li encouraged the students to broaden their horizons as they progress through their social practice experiences. The students shared insights on their overseas practice.

Faculty and students on a social practice program in Germany

RESEARCH

TSINGHUA NEWSLETTER

Research teams from Tsinghua University and Beijing Tongren Hospital discover new immunological mechanisms driving the recurrence of chronic rhinosinusitis with nasal polyps

Imagine struggling with constant nasal congestion, headaches, and loss of smell. For millions suffering from chronic rhinosinusitis, this is a daily reality.

On January 16, a groundbreaking study led by Professor Hai Qi's team from Tsinghua Medicine, Professor Luo Zhang's team from Beijing Tongren Hospital, Department of Otorhinolaryngology-Head and Neck Surgery, and Associate Professor Jianbin Wang's team from Tsinghua University School of Life Sciences was published online in *Nature* under the title ***GZMK-expressing CD8$^+$ T cells promote recurrent airway inflammatory diseases***. The study uncovers a novel subset of memory CD8$^+$ T cells and reveals a new immunological mechanism behind the recurrent flare-ups of chronic rhinosinusitis with nasal polyps (CRSwNP), offering new insights for treating this often intractable disease.

Chronic rhinosinusitis is a common chronic nasal condition that affects hundreds of millions of people worldwide. While current treatments such as oral corticosteroids and nasal endoscopic sinus surgery, they have limited efficacy the 30+ million patients suffering from refractory CRSwNP, who often experience recurrence of symptoms. Research teams from Tsinghua University and Beijing Tongren Hospital have been working on this problem for almost a decade before ultimately locating the crux of the issue—a special subset of memory CD8$^+$ T cells.

If white blood cells are akin to an army protecting human health, T lymphocytes are its "elite troops," capable of highly targeted attacks. Among them, memory CD8$^+$ T cells function like "special forces": once they have been battle-tested against viruses, they can be rapidly mobilized when the same virus appears again. By using perforin, these cells punch holes in virus-infected cells and then inject granzyme B, a "toxin" that kills those cells, thereby destroying the virus. The body also uses a defensive mechanism called the complement system, typically activated by antibodies that recognize viruses. The complement system can pierce the surface of infected cells and destroy them, while also triggering inflammation by recruiting white blood cells from the bloodstream.

By analyzing nasal polyp tissue from patients, the research team has identified an unusual group of memory CD8$^+$ T lymphocytes that secrete granzyme K—rather than the classic granzyme B—and appear in the polyp tissue each time the disease flares up. These T cells seem to recognize allergens and viruses that enter the airways. More importantly, granzyme K can directly activate the complement system without needing antibodies, thereby exacerbating tissue damage and amplifying inflammation. What makes matters worse is that these granzyme K–producing T cells are particularly "active," continually migrating from peripheral blood into nasal tissues, causing flare-ups again and again, turning what might have been a minor disease into a persistent, hard-to-cure condition.

Building upon these critical discoveries, the researchers explored the potential of treating this disease by inhibiting granzyme K. Experiments in animal models revealed that removing or inhibiting

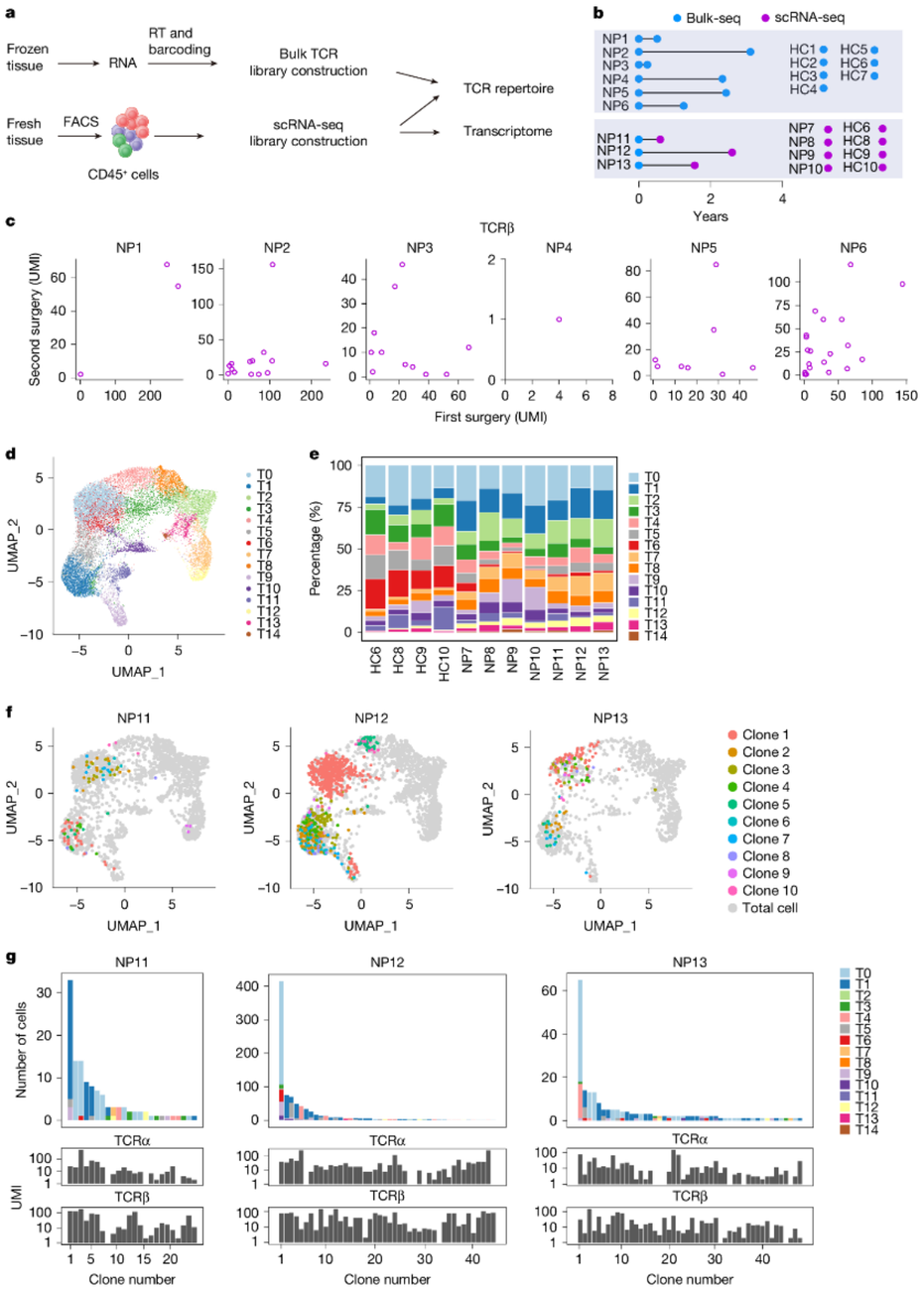


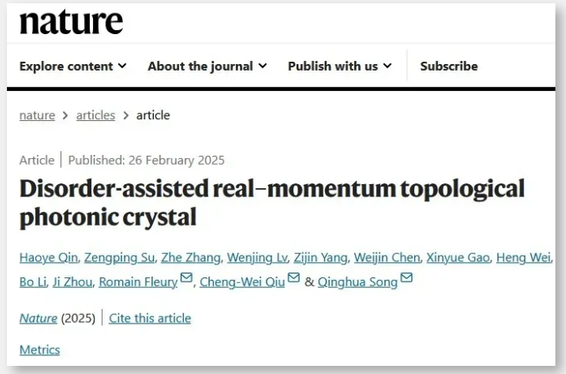
Fig. 1: Persisting T cell clones in recurrent NP.

granzyme K in CD8⁺ T lymphocytes significantly reduced inflammation and led to effective treatment outcomes. These results indicate that granzyme K and the memory CD8+ T cells that secrete it are key drivers of relapse in refractory chronic rhinosinusitis with nasal polyps—and could also serve as crucial biomarkers for forecasting disease progression and treatment responses.

By unveiling a new subset of memory CD8⁺ T cells, clarifying how granzyme K activates the complement system to boost inflammation, and presenting a new immunological mechanism behind chronic airway inflammation (as seen in chronic rhinosinusitis with nasal polyps), this study lays the groundwork for developing innovative treatments. Its publication signals that Chinese researchers have taken a leading position globally in investigating refractory chronic rhinosinusitis with nasal polyps and translating these findings into clinical practice.

Professor Qi Hai from Tsinghua University, Professor Zhang Luo from Beijing Tongren Hospital, Associate Professor Wang Jianbin from Tsinghua University, and Associate Researcher Liu Xin from Tsinghua Medicine are the corresponding authors of this paper. Research Fellow Lan Feng from Beijing Tongren Hospital, Ph.D. candidate Li Jizhou from the School of Life Sciences, Ph.D. candidate Miao Wenxuan from the School of Basic Medical Sciences, and Ph.D. candidate Sun Fei from the School of Life Sciences at Tsinghua University are the co-first authors of this paper. Professor Wang Chengshuo, Professor Wang Xiangdong, and Chief Physician Duan Su from Beijing Tongren Hospital made significant contributions to this project.
The study was supported by the National Key R&D Program, Tsinghua University Independent Research Program, National Natural Science Foundation of China, the Shanxi Medical University–Tsinghua Medicine Frontier Biomedical Research Program, the National Health Commission, and the New Cornerstone Foundation.

Tsinghua group makes progress in topological photonics



Recently, a groundbreaking research titled *"Disorder-assisted real-momentum topological photonic crystal"* was published in ***Nature*** by Professor Song Qinghua's team from Tsinghua Shenzhen International Graduate School (Tsinghua SIGS). This research introduces a novel concept of real-momentum topological photonic crystals, which can incorporate disorder as an information carrier without compromising the topological properties of optical singularities, addressing a significant challenge in the field of topological photonics.

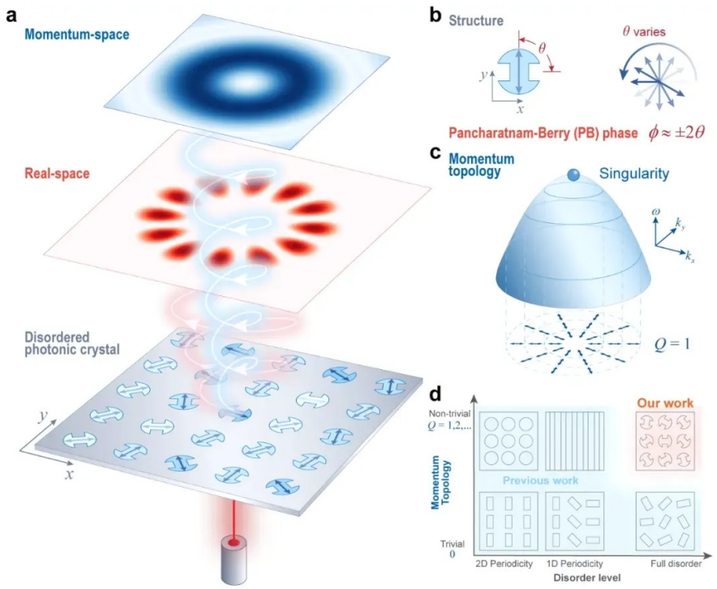


Fig. 1 Schematic illustration of the real-momentum topological photonic crystal.

A Major Challenge in Topological Photonics

In topological photonics, Bound States in the Continuum (BICs) are specific optical singularities where energy is localized and cannot radiate outward. These states form non-radiative, high-Q polarization singularities in momentum space, with non-trivial topological charge in their surrounding polarization distributions. BIC hold great promise for applications in vortex beam generation, field enhancement, and high-Q optical systems.

Conventional BICs in metasurfaces and photonic crystals rely on strict periodic structures. Disorder in these structures can disrupt periodicity, causing BIC to degrade into quasi-BIC (QBIC) and lose their topological properties. Consequently, past research has mainly focused on minimizing the impact of disorder. However, the disorder also provides additional degrees of freedom for structural control, which is crucial for wavefront manipulation applications. Thus, one of the major challenges in topological optics is how to introduce effective disorder into BICs without compromising their topological characteristics.

The Unique Concept of Real-Momentum Topological Photonic Crystals

To address this challenge, the research team proposed the concept of real-momentum topological photonic crystals for the first time (Figure 1). They discovered a unique BIC resonance mode in photonic crystals, where the electric field distribution exhibits a topological singularity at the structural center. Encircling this singularity, a vortex phase profile with a non-trivial topological charge is formed. Remarkably, this topological resonance mode is immune to structural perturbations. When the structure undergoes minor changes, the resonance mode remains unaffected due to the topological protection of the singularity, thereby significantly enhancing the stability of BICs (Figure 2).

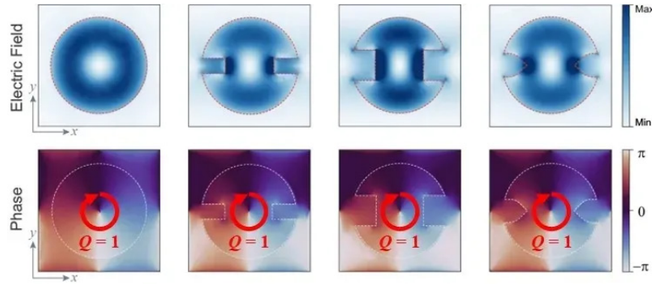


Fig.2 Topological resonance mode with immunity to structural perturbations. The electric field distribution exhibits a singularity at the center of the structure, and the phase distribution has a non-trivial topological charge, which remains unaffected by structural perturbations.

Promising Future Applications

The BIC momentum-space topological singularity in these topological photonic crystals coexists with the real-space Pancharatnam-Berry (PB) phase distribution, which can be used to encode additional wavefront control information. As a proof of the concept, the research team introduced PB phase by rotating metasurface structures in real space, using dual topological charges in both spaces to successfully create nested patterns and high-dimensional topological vortices in real-momentum space. Additionally, the study encoded holographic images into the PB phase and experimentally verified the recovery of high-quality metasurface holograms and momentum vortex beams (Figure 3). The dispersion characteristics of the momentum singularity and the broadband operation of the PB phase allow for wavelength-controlled separation and recombination in both spaces, offering higher tunability and information capacity.

In the future, Professor Song's team will continue to address key challenges in this important field, and aim to apply the research findings to optical communication, holographic displays, and special-shaped lasers.

The corresponding authors are Song Qinghua, associate professor at Tsinghua SIGS, Cheng-Wei QIU, professor at the National University of Singapore (NUS), and Romain FLEURY, professor at École Polytechnique Fédérale de Lausanne (EPFL). The first authors are Haoye QIN, research assistant at Tsinghua SIGS and doctoral candidate from EPFL, Zengping SU, doctoral student from Tsinghua SIGS, and Zhe ZHANG, postdoctoral fellow from EPFL. Research collaborators include academician Ji ZHOU from Tsinghua University, researcher Bo LI, doctoral candidate Wenjing LV, doctoral candidate Zijin YANG and postgraduate student Xinyue GAO from Tsinghua SIGS, postdoctoral fellow Weijin CHEN, doctoral candidate Heng WEI from NUS, and professor Yuzhi SHI from Tongji University.
This work was supported by the National Natural Science Foundation of China and the Science, Technology and Innovation Commission of Shenzhen municipality.

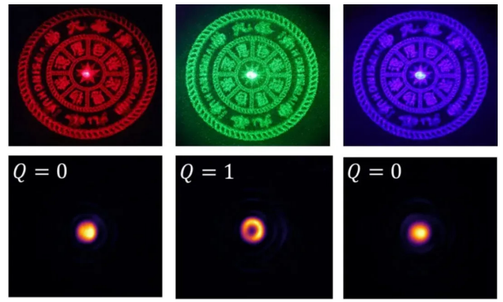


Fig.3 Wavefront manipulation at the BIC. The hologram formed by PB phase encoding exhibits broadband characteristics (top), while the vortex beam generated by the BIC topology has narrowband characteristics (bottom).

TSINGHUA COMMUNITY

TSINGHUA NEWSLETTER

Tsinghua Professor Cheng Gong named in Cell's "50 Scientists that Inspire"

Tsinghua Professor Cheng Gong has been chosen for Cell Press' "50 Scientists that Inspire" list, honoring his outstanding contributions in unraveling mosquito-borne virus infection and transmission mechanisms.

Cheng's pioneering research on these topics, as well as his antiviral immunity studies, has significantly advanced China's biomedical research, reshaping our understanding of mosquito-borne diseases on a global scale, according to Cell Press.

As part of the celebrations for the publisher's 50th anniversary, Cell Press has recently spotlighted 50 notable scientists who inspire and drive innovation.

Cheng's research is believed to have not only paved the way for innovative drug and vaccine development but also played a crucial role in providing essential technical support for the prevention and control of emerging and re-emerging vector-borne infectious diseases and safeguarding public health.

As the corresponding author, Cheng has published over 100 research articles and invited reviews in internationally renowned journals such as Nature, Science, and Cell.

His groundbreaking work on the Zika virus outbreak mechanism and pioneering strategies for tackling mosquito-borne diseases has earned him 12 national patents. Recognized with numerous awards and entrusted with key roles in various scientific societies, Cheng's impact resonates across scientific societies worldwide.

Research team from Department of Computer Science and Technology wins Best Paper Award at FAST 2025


usenix
THE ADVANCED COMPUTING SYSTEMS ASSOCIATION

ERIK RIEDEL BEST PAPER AWARD

presented to

Ruoyu Qin, Zheming Li, Weiran He, Jialei Cui, Feng Ren, Mingxing Zhang, Yongwei Wu, Weimin Zheng, and Xinran Xu

for

Mooncake: Trading More Storage for Less Computation — A KVCache-centric Architecture for Serving LLM Chatbot

Presented at the 23rd USENIX Conference on File and Storage Technologies

Amy Rich
President

2/25/2025
Date

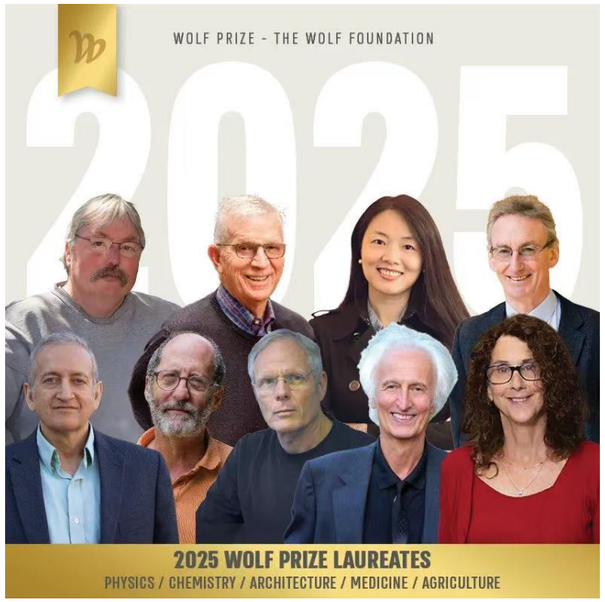
From February 25 to 27, the 23rd USENIX Conference on File and Storage Technologies (FAST 2025) was held in Santa Clara, USA. A paper titled "Mooncake: Trading More Storage for Less Computation — A KVCache-centric Architecture for Serving LLM Chatbot," co-authored by a research team led by Professors Mingxing Zhang, Yongwei Wu, and Weimin Zheng from the Department of Computer Science and Technology and Moonshot AI, won the Erik Riedel Best Paper Award. The paper's first author is Ruoyu Qin, a PhD student from the Department of Computer Science and Technology, advised by Assistant Professor Mingxing Zhang.

The paper introduces Mooncake, the serving platform for Kimi, an LLM service provided by Moonshot AI. Mooncake uses a KVCache-centric disaggregated architecture that not only separates prefill and decoding clusters but also takes advantage of underutilized CPU, DRAM, SSD, and NIC resources in the inference cluster to form a distributed KVCache pool. Central to Mooncake is its global cache pool and KVCache-aware scheduler, designed to maximize throughput under strict latency-related service level objectives (SLOs).

Experiments show that Mooncake excels in handling long-context inputs. In tests with real-world workloads, compared to baseline methods, Mooncake improves the effective request capacity by 59% to 498% while meeting SLO requirements. Currently, Mooncake is deployed on thousands of nodes, processing over 100 billion tokens per day. In practical scenarios, its innovative architecture has enabled Kimi to handle 115% and 107% more requests on NVIDIA A800 and H800 clusters, respectively.

FAST is a premier academic conference in the field of computer storage. Over the past two decades, it has played a significant role in shaping storage technologies. With its low acceptance rate and high publication standards, it is recognized by the China Computer Federation as a Class A international academic conference for storage systems.

Tsinghua professor honored with 2025 Wolf Prize in Architecture



Professor Xu Tiantian from Tsinghua University has been awarded the Wolf Prize in Architecture "for her architecture that transformed villages throughout China economically, socially, and culturally".

The nine Wolf Prize Laureates in 2025 are Jeffery L. Dangl, Wolf Prize in Agriculture (first row from top, first from left); Brian J. Staskawicz, Wolf Prize in Agriculture (first row from top, second from left); Xu Tiantian, Wolf Prize in Architecture (first row from top, third from left); Jonathan D. G. Jones, Wolf Prize in Agriculture (first row from top, fourth from left); Jainendra K. Jain, Wolf Prize in Physics (second row from top, first from left); James P. Eisenstein, Wolf Prize in Physics (second row from top, second from left); Mordehai (Moty) Heiblum, Wolf Prize in Physics (second row from top, third from left); Helmut Schwarz, Wolf Prize in Chemistry (second row from top, fourth from left); Pamela J. Bjorkman, Wolf Prize in Medicine (second row from top, fifth from left).

Xu Tiantian earned her Bachelor of Architecture from Tsinghua University in 1997 and later obtained a Master of Architecture in Urban Design (MAUD) from the Harvard Graduate School of Design. Currently, Xu serves as a professor at Tsinghua's School of Architecture.

In 2020, Xu was elected an Honorary Fellow of the American Institute of Architects (AIA), and in 2024, she became a member of the Akademie der Künste in Germany. Xu has received numerous prestigious awards, including the Swiss Architectural Award in 2022, the Berlin Art Prize in 2023, the Marcus Prize, the Holcim Award Gold for Asia Pacific, and UNESCO's Global Award for Sustainable Architecture.

She has also served as a visiting professor at Yale University and the Accademia di Architettura di Mendrisio in Switzerland.

In recent years, Xu Tiantian has focused on rural architecture in China, dedicating her architectural practice to rural vitalization. Through her approach, she strategically intervenes to invigorate the comprehensive development of rural culture, agricultural industries, and tourism economies.

The Wolf Prize acknowledges scientists and artists worldwide for their outstanding achievements in advancing science and the arts for the betterment of humanity.

DIVERSE CAMPUS

TSINGHUA NEWSLETTER

Sixth Tsinghua-PKU Low-carbon Campus Design Friendly Competition held

The 6th Tsinghua-Peking University Low-carbon Campus Design Friendly Competition was recently held.

The contest showcased the outcomes of the Handmade Innovation Practice course from Tsinghua University and the Sustainable Campus Practice, Green Campus Scientific Practice, Industrial Ecology courses from Peking University.

More than 130 students from various departments of Tsinghua and PKU presented the outcomes of 22 projects. Six groups of the two universities shared research outcomes in fields such as sustainable living, environmental innovation, and resource conservation, including projects like a pet-friendly garden, innovative tomato cultivation methods, a desktop micro-garden recreating a natural retreat, a low-carbon campus platform for collective action, dormitory upcycling initiatives, and creative solutions to reduce food waste.

Other projects on display included a low-carbon goods market, featuring interactive activities such as making plant-based lip balm, handmade soap, and enzyme cleaners.

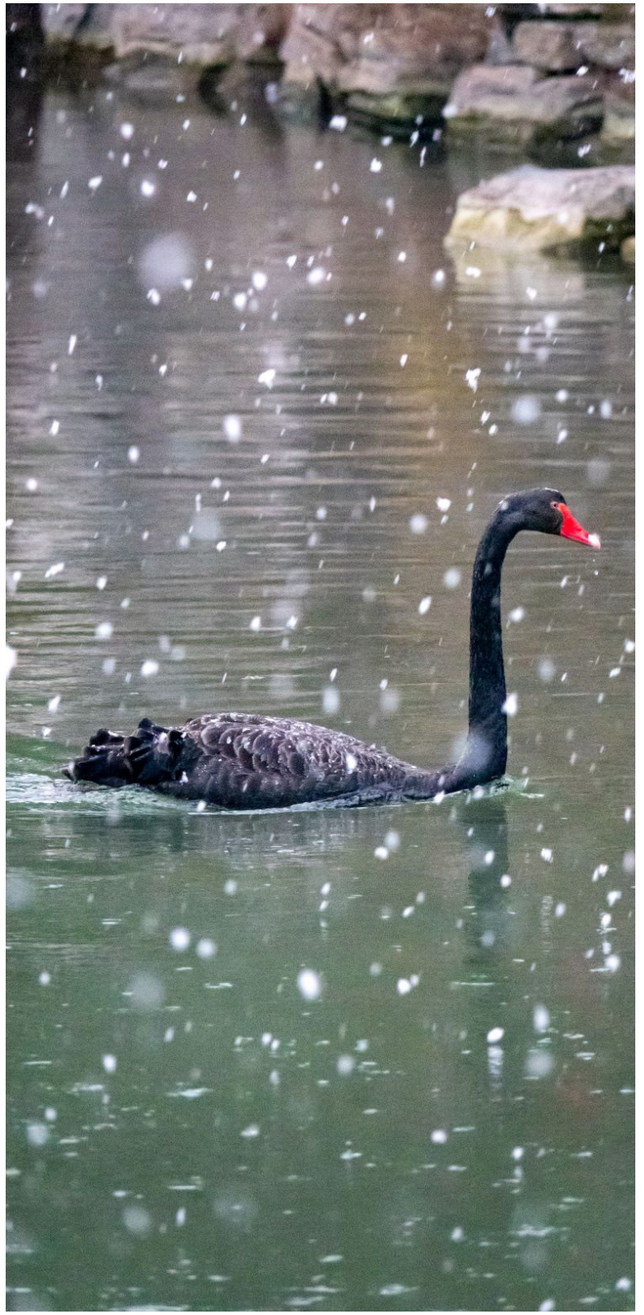
Tsinghua has proactively sought to align with Beijing's "Garden City" guidelines, which were released in April and outline long-term goals for green space integration through 2035. The Handmade Innovation Practice course focuses on home gardening, guiding students to explore topics ranging from gardening skills to spatial design, from cutting-edge technologies to the aesthetics of everyday life.

Starting with real-life challenges, students were encouraged to think critically, use hands-on methods and innovate, ultimately producing tangible learning outcomes.

The competition gets underway

Group photo of participating students and faculty

Spring Snow in Tsinghua



Photos courtesy of Luo changsheng, Huo Yuandong, Hou Jinling, and Zhong Hao

清華大學
Tsinghua University

www.tsinghua.edu.cn