清華大學智能产业研究院

Institute for AI Industry Research, Tsinghua University

01 AIR Scientists & Talent development

Professor Rahim Tafazolli Appointed as Distinguished Visiting Professor at Tsinghua University



April 2026, Professor Rahim Tafazolli, a Fellow of the UK Royal Academy of Engineering, was appointed as a Distinguished Visiting Professor at Tsinghua University. As a globally recognized scientist in mobile communications, satellite networks, and wireless signal processing, Professor Tafazolli currently serves as the Regius Professor at the University of Surrey and Director of the 5G/6G Innovation Centres. His appointment aims to deepen international research cooperation with AIR in intelligent computing and next-generation network technologies.

AIoT Team Welcomes Dr. Li Kun



AIR has recruited Dr. Li Kun as a full-time faculty member. Dr. Li holds a Ph.D. from the Institute of Computing Technology at the Chinese Academy of Sciences and previously served as a Senior Researcher at Microsoft Research Asia. His research focus lies primarily in high-performance computing, and he will now lead efforts to advance scientific world model-related research. Dr. Li has received several best paper awards at top international conferences, including SC and PPoPP. His other notable honors include the CCF High-Performance Computing Young Scientist Award, the CCF Outstanding Doctoral Dissertation Award, the ACM SIGHPC China Rising Star Award, and the National Excellent Doctoral Dissertation Award.

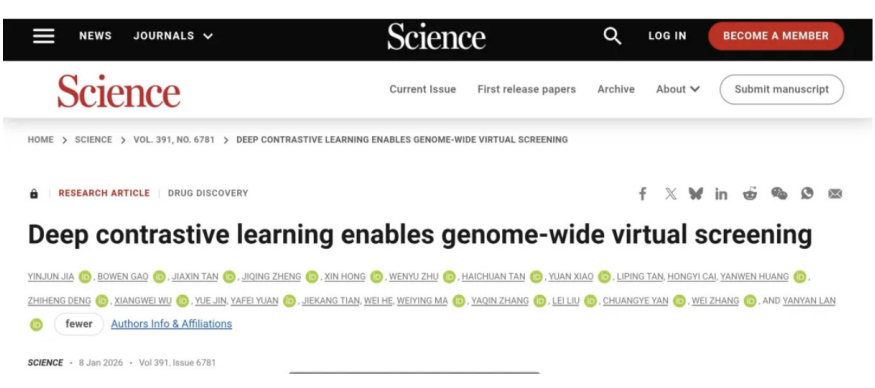
Hong Kong Tam Shiu Charitable Trust Supports AIR

In March 2026, the Tam Shiu Charitable Trust (Hong Kong) made a generous donation to support the Tsinghua AIR Agent Hospital project. The gift establishes a dedicated research fund, student scholarships, and a young scholar fund. Over the next five years, this contribution will provide vital support for AI-empowered medical talent development, healthcare model innovation, and the advancement of young scholars. The Tam Shiu Charitable Trust has long upheld its mission of "alleviating poverty, relieving suffering, cultivating talent, and benefiting society," while supporting educational development, scientific progress, public welfare, and social ethics. Through its support of AIR at Tsinghua University, the charitable trust aims to promote innovative research in AI for medical education, healthcare, and

02 Research and Industry Partnerships

Jan

In January, Professor Lan Yanyan of AIR, in collaboration with teams from the School of Life Sciences and the Department of Chemistry, innovatively developed "DrugCLIP," an AI-driven, ultra-high-throughput virtual drug screening platform. DrugCLIP achieves a million-fold increase in screening speed compared to traditional methods, while also delivering significant breakthroughs in predictive accuracy. Leveraging this platform, the team successfully completed the first-ever virtual drug screening covering the human genome scale, opening new possibilities for innovative drug discovery. The research findings were published online in Science under the title "Deep contrastive learning enables genome-wide virtual screening."

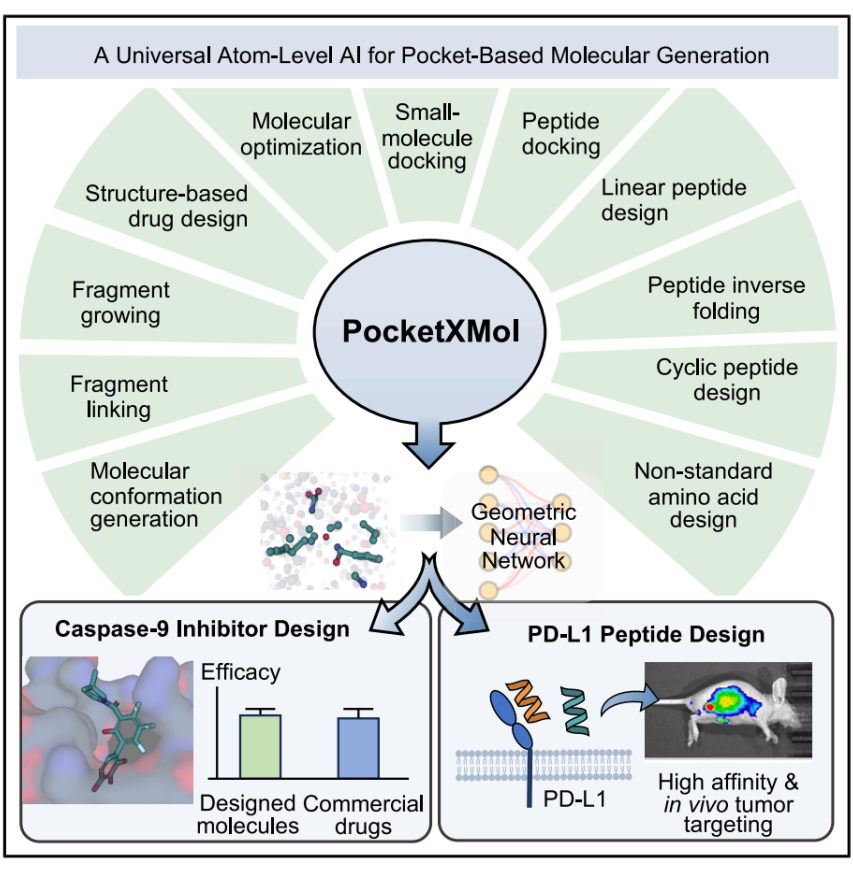


In January, AIR, the School of Medicine at Tsinghua University, and the People's Government of Fangchenggang City held a memorandum of understanding signing ceremony, utilizing a hybrid online and offline format across Tsinghua University and Fangchenggang. The three parties will engage in strategic cooperation focusing on the application and development of "AI + Healthcare" within the Fangchenggang International Medical Open Pilot Zone. They will jointly carry out pilot construction of an artificial intelligence hospital based on the "Agent hospital" system, promote the high-quality development of the Fangchenggang International Medical Open Pilot Zone, and enhance regional medical service capabilities. These efforts aim to support the construction of the Shanghai Cooperation Organization community of shared future and the China-ASEAN community of shared future, while contributing to the building of a global community of health for all. Fangchenggang Mayor Qiu Minghong and Tsinghua University Vice President Wang Hongwei attended the ceremony and delivered speeches. Liu Yang, Dean of AIR, together with Liu Lin, Deputy Mayor of Fangchenggang, and Liu Peng, Party Secretary of the School of Biomedical Engineering at Tsinghua University, jointly signed the memorandum of understanding.



Feb

In February, a joint research team—comprised of AIR Associate Professor Jianzhu Ma, Professor Xinquan Wang from the School of Life Sciences at Tsinghua University, Professor Zihua Wang from Xuanwu Hospital/Fujian Medical University, and Professor Chuanhui Han from the School of Basic Medical Sciences at Peking University—published a research paper in Cell titled "Unified modeling of 3D molecular generation via atomic interactions with PocketXMol." The research team developed PocketXMol, an atomic-level generative AI model. Using atomic prompts as task instructions, the model can uniformly handle various generation tasks related to protein-pocket interactions—such as structure prediction and de novo design for small molecules and peptides—without the need for task-specific fine-tuning. It achieved state-of-the-art performance in 11 out of 13 computational tasks. The designed caspase-9 inhibitor showed efficacy comparable to commercial drugs, while the generated PD-L1 binding peptides exhibited high affinity and in vivo tumor targeting, providing a versatile platform for AI-assisted drug discovery.



Mar

In March, the team led by Associate Professor Hao Zhou at AIR, in collaboration with ByteDance's Seed team, released CUDA Agent, focusing on the automatic optimization of high-performance GPU kernels and exploring the use of multi-stage Agentic RL to drive the generation and iteration of low-level operators. This system establishes an agentic closed loop encompassing "code generation—compilation and execution—correctness verification—performance profiling—feedback optimization." Backed by high-quality data pipelines and multi-file operator implementations, it enables the model to autonomously perform

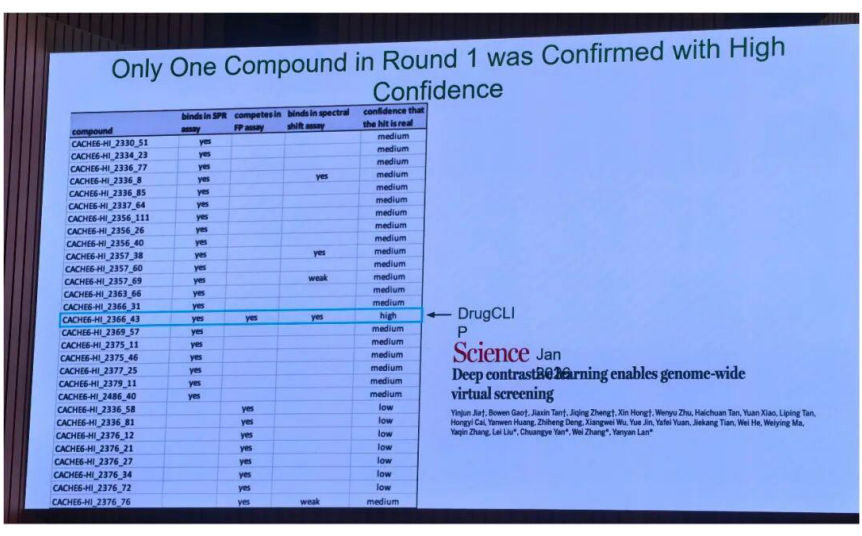


Apr

In April, AIR and AstraZeneca announced the establishment of the "Tsinghua University (Institute for AI Industry Research) – AstraZeneca Joint Research Center for AI-driven Drug Discovery." Leveraging AIR's strengths in artificial intelligence research and talent, combined with AstraZeneca's global R&D platform and clinical translation capabilities, the center focuses on innovations in AI-driven molecular research, translational medicine, and clinical development to accelerate the transition of cutting-edge research findings into clinical applications. Lan Yanyan, Vice Dean of AIR, serves as the Director of the Joint Research Center, and Meng Chen, Vice President of R&D China at AstraZeneca and Head of Biostatistics and Data Science, serves as the Deputy Director.

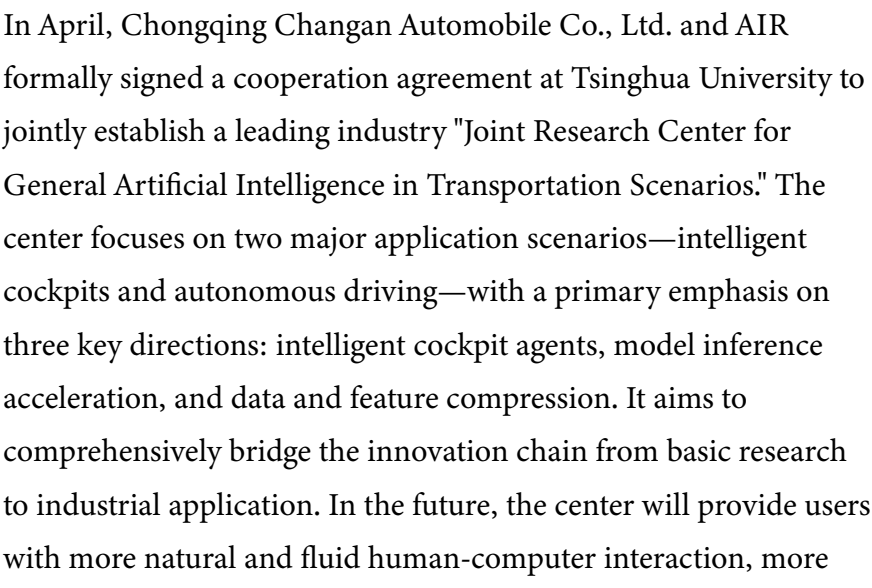


In April, Professor Lan Yanyan's team (ATOM Lab) at AIR participated in the sixth round of the international drug discovery competition, the CACHE Hit Discovery Challenge (CACHE #6), and achieved significant breakthroughs in the blind test task for the epigenetic target SETDB1 triple Tudor domain. This round attracted 19 participating teams globally, submitting and experimentally testing over 1,300 candidate molecules. The methods employed spanned various paradigms from physics-driven to data-driven approaches, including representative work from top international research teams, i.e. Rosetta system from Nobel laureate David Baker's laboratory, the deep learning docking model DiffDock proposed by MIT, and the generative molecular design method GFlowNet proposed by the team from the University of Montreal and Mila - Quebec AI Institute, led by Turing Award laureate Yoshua Bengio. In this real-world drug discovery task, Prof. Lan's team leveraged their self-developed DrugCLIP model to efficiently screen candidate molecules from a vast compound space. Among the submitted over 1300 molecules, they successfully identified the only positive compound that was consistently validated across multiple experimental systems, achieving a key breakthrough under a rigorous blind testing system.



compound	binds in SPR assay	competes in FP assay	binds in spectral shift assay	confidence that the hit is real
CACHE6-HI_2330_51	yes			medium
CACHE6-HI_2334_23	yes			medium
CACHE6-HI_2336_77	yes			medium
CACHE6-HI_2336_8	yes		yes	medium
CACHE6-HI_2336_85	yes			medium
CACHE6-HI_2337_64	yes			medium
CACHE6-HI_2356_111	yes			medium
CACHE6-HI_2356_26	yes			medium
CACHE6-HI_2356_40	yes			medium
CACHE6-HI_2357_38	yes		yes	medium
CACHE6-HI_2357_60	yes			medium
CACHE6-HI_2357_69	yes		weak	medium
CACHE6-HI_2363_66	yes			medium
CACHE6-HI_2366_31	yes			medium
CACHE6-HI_2366_43	yes	yes	yes	high
CACHE6-HI_2369_57	yes			medium
CACHE6-HI_2375_11	yes			medium
CACHE6-HI_2375_46	yes			medium
CACHE6-HI_2377_25	yes			medium
CACHE6-HI_2379_11	yes			medium
CACHE6-HI_2486_40	yes			medium
CACHE6-HI_2336_58		yes		low
CACHE6-HI_2336_81		yes		low
CACHE6-HI_2376_12		yes		low
CACHE6-HI_2376_21		yes		low
CACHE6-HI_2376_27		yes		low
CACHE6-HI_2376_34		yes		low
CACHE6-HI_2376_72		yes		low
CACHE6-HI_2376_76		yes	weak	medium

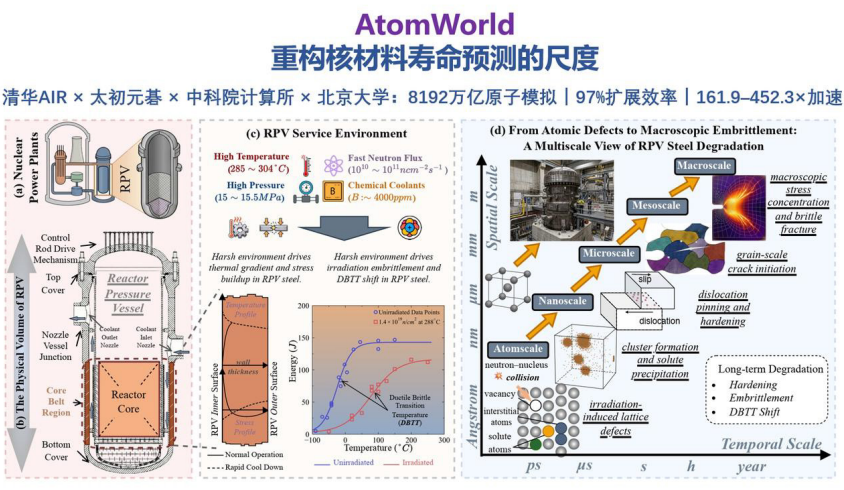
In April, Chongqing Changan Automobile Co., Ltd. and AIR formally signed a cooperation agreement at Tsinghua University to jointly establish a leading industry "Joint Research Center for General Artificial Intelligence in Transportation Scenarios." The center focuses on two major application scenarios—intelligent cockpits and autonomous driving—with a primary emphasis on three key directions: intelligent cockpit agents, model inference acceleration, and data and feature compression. It aims to comprehensively bridge the innovation chain from basic research to industrial application. In the future, the center will provide users with more natural and fluid human-computer interaction, more reliable and efficient intelligent driving, and safer, more convenient vehicle-cloud services, comprehensively upgrading the intelligent mobility experience. He Gang, Vice President of Changan Automobile and Chairman/President of Changan Technology; Tao Ji, Assistant President of Changan Automobile, Chief Intelligent Driving Technology Officer, and Deputy Director of the Joint Research Center Management Committee; along with Zhang Ya-Qin, Member of the Chinese Academy of Engineering, Founding Dean of AIR, and Director of the Joint Research Center Management Committee; and Liu Yunxin, Vice Dean of AIR and Member of the Joint Research Center Management Committee, attended and witnessed the signing. Pan Yifeng, Deputy Director of the Joint Research Center, and Nie Zaiqing, Chief Researcher at AIR and Director of the Joint Research Center, signed the agreement on behalf of both parties.



In April, The inaugural Steering Committee Meeting of the AIR-Tars-Academia-Research Deep Integration Special Project was held. The meeting clarified the project's overarching goals, phased research tasks, and key milestones. It established a joint research roadmap for both parties in areas including embodied intelligence/embodied large models, world model construction, and multi-modal perception. Furthermore, the committee reviewed and approved the project's working mechanisms, annual work plans, and output requirements, reaching a consensus on the pathway for transitioning from basic research to industrial application.



In April, Leveraging the ongoing deep collaboration between AIR and Taichu Yuanqi in the fields of artificial intelligence and high-performance computing, the "AtomWorld" atomic world model research results were officially released. This model was jointly developed by Assistant Researcher Li Kun from the AIR AIoT team in collaboration with the Institute of Computing Technology (CAS), Peking University, and other academic institutions. Relying on AIR's innovative research capabilities in AI and supported by the large-scale computing power provided by Taichu Yuanqi's heterogeneous intelligent computing platform, the project successfully completed a simulation task involving 81.92 trillion atoms, achieving a significant improvement in the efficiency of atomic-level long-term evolution simulations. These results fully demonstrate the significant value of deep integration between industry, academia, and research in driving innovation in AI for Science, while providing new research paradigms for nuclear energy safety, advanced material development, and the advancement of intelligent computing technology.



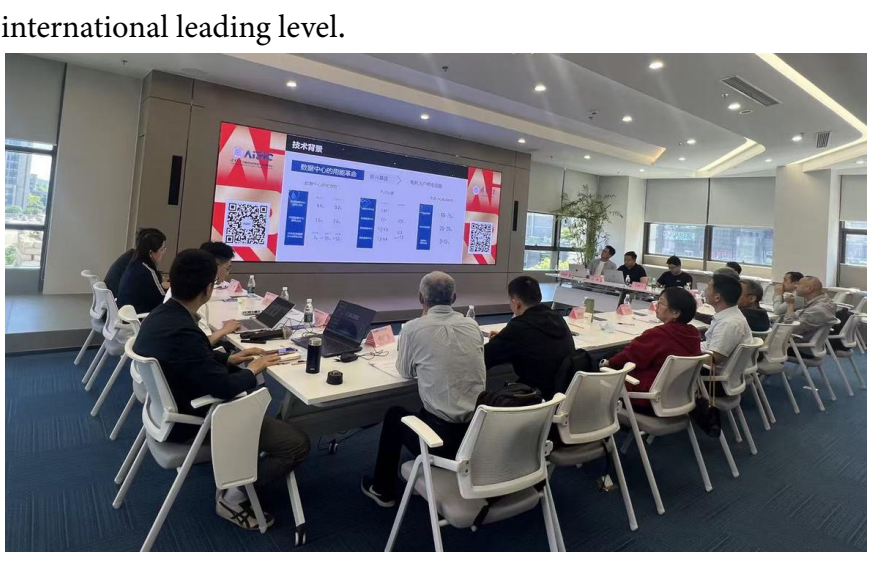
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In April, Lex Fridman, Nathan Lambert, Florian Brand, and over ten other AI writers from the United States visited AIR. Founding Dean Academician Zhang Ya-Qin, Chief Researcher Professor Liu Jingjing, and Associate Professor Zhan Xianyuan hosted the visit. The parties engaged in in-depth discussions on core topics such as frontier technological trends in artificial intelligence, AI ethics, and safety governance.



May

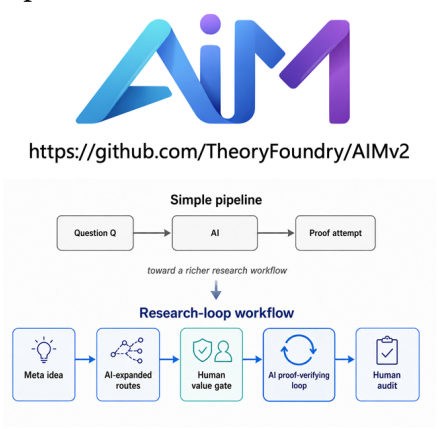
In May, Entrusted by the Chinese Association of Refrigeration (CAR), an expert group organized by the association conducted a technology achievement evaluation for the project "Physics-Informed Reinforcement Learning Algorithm and Its Application in Data Center Terminal Cooling Systems," jointly applied for by AIR, GDS, and the Tsinghua Wuxi Research Institute Intelligent Industry Innovation Center (AIRIC). Through material review, on-site inquiry, project defense, and intensive discussion, the expert group concluded that the overall technology of the project has reached an international advanced level, with the time-reversal symmetric thermodynamic model reaching an international leading level.

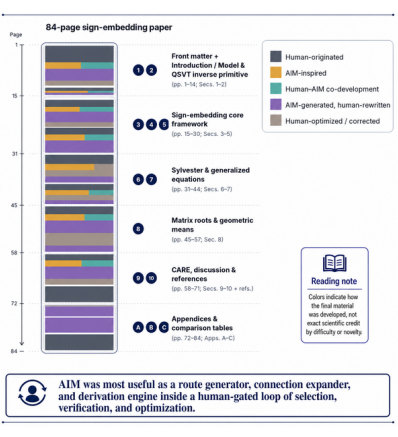


In May, the AIR–AsiaInfo 6G Network and Intelligent Computing Joint Research Center held an academic seminar in Beijing. The meeting reviewed the center's annual progress and planned subsequent development directions. Building upon the existing research layout, the two parties conducted in-depth discussions on core topics such as embodied intelligence brains, industry world models, intelligent agent internet orchestration operating systems, and AI-native communication products. They clarified the key focus for the next stage and further deepened bilateral cooperation. Ouyang Ye, CEO and CTO of AsiaInfo (participating online), Deng Weihong, Chief Scientist of AsiaInfo, and Liu Yunxin, Vice Dean of AIR, attended the meeting.

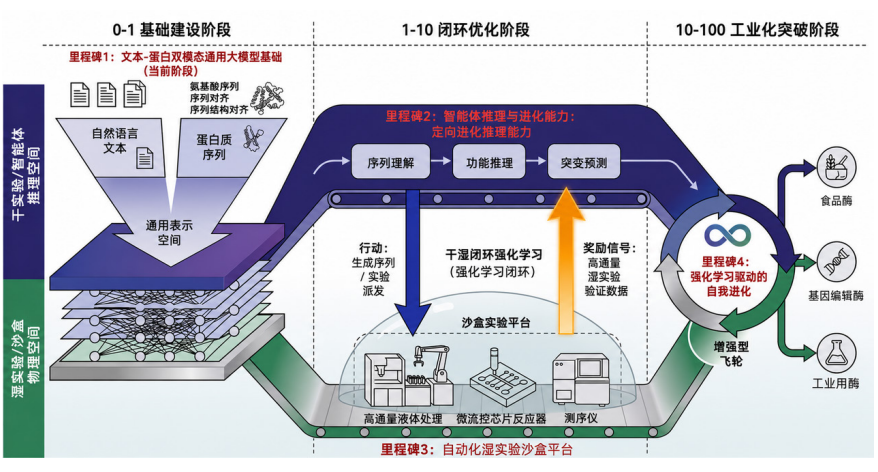


In May, AIR and Tsinghua University's Qiuzhen College applied their jointly developed AI Mathematician (AIM) framework in frontier research on mathematics and quantum algorithms. The project led to the development of a systematic sign-embedding framework of operator-output quantum algorithms for matrix equations and matrix functions. The work highlights the growing role of AI not only in proving research-level mathematical results, but also in supporting the broader scientific discovery process. By helping researchers explore alternative research routes, formulate theoretical problems, generate candidate theorems and proofs, and analyze algorithmic complexity, AI shows considerable potential as a partner in frontier mathematical research.





In May, the team led by Associate Professor Hao Zhou at AIR, in collaboration with the Shanghai Artificial Intelligence Laboratory, released AMix-2. With diffusion Large Language Models (dLLMs) as its core architecture, this model unifies the modeling of natural language, protein sequences, protein semantic understanding, and functional sequence design, natively integrating the protein modality into the large model framework and propelling large models from mere tool calling toward the deep understanding and autonomous design of proteins. AMix-2 demonstrates for the first time foundational capabilities that bridge the modality gap between protein understanding and design. In a general protein question-answering benchmark covering 16 categories of core tasks, its accuracy surpassed that of Claude Opus 4.7, ranking first on the leaderboard.



Jun

In June, AIR hosted the "Taihu Dialogue: The New Era of Agentic AI" event. Focusing on the frontier of agentic AI, the event featured the collective release of several world-leading innovations, including the "Agent hospital" online virtual consultation room. The event also included industry cooperation signings, the announcement of the first batch of AI fund investment projects, and the appointment ceremony for the Expert Advisory Committee. More than 200 guests attended the event, including Zhang Ya-Qin, Foreign Member of the Chinese Academy of Engineering and Founding Dean of AIR; Zhang Hongjiang, Foreign Member of the U.S. National Academy of Engineering and Distinguished Visiting Professor at AIR; Rahim Tafazolli, Fellow of the Royal Academy of Engineering; and Rui Yong, Foreign Member of the Academia Europaea and Fellow of the Canadian Academy of Engineering. Representatives from various sectors gathered to engage in in-depth discussions on the evolution, industrial implementation, and ecosystem development of agentic AI technology.



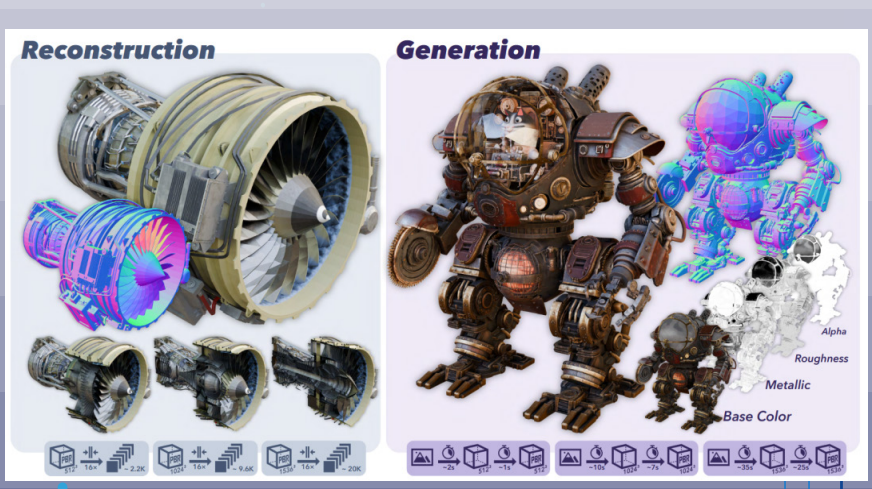
» In June, four globally leading achievements were released, covering four key fields: embodied intelligence, livelihood services, industrial control, and smart healthcare. These include: z0, a continuously evolving physical agent that allows robots to become smarter the more they are used in real-world scenarios; REACH, an all-scenario mobility assistance robot, which is the world's first robotic platform to achieve both human transport and dual-arm collaboration; Zenith AI control system, which has been operating stably in domestic data centers for over 2,000 hours, redefining industrial control with AI; and the Tairex Agent hospital virtual consultation room, which has opened for global public beta testing, enabling every doctor to have an AI digital twin.



» In June, The THU-ATOM Lab, led by Professor Lan Yanyan at AIR, in collaboration with the National Supercomputing Center in Tianjin, officially released "GalaxyVS," an ultra-large-scale artificial intelligence virtual screening system geared toward a synthesizable chemical space of nearly 100 billion. Virtual screening of ultra-large-scale compound libraries faces a core scientific challenge: how to guarantee both high affinity and structural diversity of candidate molecules while overcoming the storage and computational bottlenecks of traditional pair-wise docking in an exponentially expanding chemical space? GalaxyVS pioneers the reconstruction of "protein-ligand pair-wise docking" into ultra-large-scale parallel retrieval of high-dimensional continuous vectors. It achieves extreme inference speed while locking in high-affinity potential, using disruptive peta-scale computational throughput to shatter the technical barriers that previously made it impossible to achieve scale, high precision, and structural diversity simultaneously. This sets a new global performance benchmark for ultra-large-scale drug screening.



» In June, The research paper "TRELLIS.2: Native and Compact Structured Latents for 3D Generation," jointly completed by Chen Xiaoxue (a doctoral student at AIR), Researcher Zhao Hao (AIR), and institutions including Microsoft Research, won the Best Student Paper Award at CVPR 2026, a top international conference in the field of computer vision. As a new-generation large-scale 3D generation model, TRELLIS.2 is the first to propose a native and compact structured 3D latent representation. This breakthrough addresses the representation bottleneck that has long constrained development in the 3D generation field, enabling high-quality generation of high-fidelity 3D assets from a single image. The model can directly generate 3D assets with resolutions up to 1536^3 and full Physically Based Rendering (PBR) materials. It also supports complex topologies that are difficult for traditional methods to handle, such as open surfaces, non-manifold structures, and complex internal geometries, providing new foundational capabilities for fields such as game production, digital content creation, robotic simulation, digital twins, and spatial intelligence.



03 Academic Exchanges

Recently, Academician Zhang Ya-Qin attended the fifth meeting of the International Dialogues on AI Safety (IDAIS) series. Together with several of the world's leading artificial intelligence scientists and governance experts—including Turing Award laureate Andrew Yao, Dean of the Institute for Interdisciplinary Information Sciences at Tsinghua University and Dean of the Tsinghua University School of Artificial Intelligence; Turing Award laureate Yoshua Bengio; and Professor Stuart Russell of the University of California, Berkeley—he co-drafted and signed the "IDAIS London Declaration." This declaration calls on all nations to confront the common threats posed by the increasing proliferation of artificial intelligence-enabled cyberattacks and bio-misuse technologies, and to collaborate on coordinated preventive measures.



In addition, Academician Zhang attended several other high-profile events:
- March: Attended the Boao Forum for Asia Annual Conference 2026, where he shared insights on new trends in AI technological development, pathways for industrial implementation, and collaborative innovation across Asia.
- March: Attended the closed-door Council Meeting of the China EV100 (China Electric Vehicle Forum), where he presented his views on the commercial development of autonomous driving.
- June: Delivered a keynote speech titled "Perspectives on the Development of AI Agents" at the "Taihu Dialogue: The New Era of Agentic AI" forum.

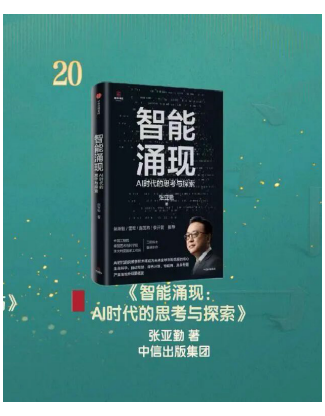






Furthermore, in March, Academician Zhang Ya-Qin's book, Intelligent Emergence: Thoughts and Explorations in the AI Era, was named a "CCTV Book of the Year." The CMG "CCTV Book of the Year" is a national-level book honor guided by the Publicity Department of the Communist Party of China, selected by the China Book Review Society, and produced by the China Media Group (CMG). As a core component of the CMG annual cultural gala, it has become one of the most authoritative award programs in the domestic publishing field since its inception in 2014.

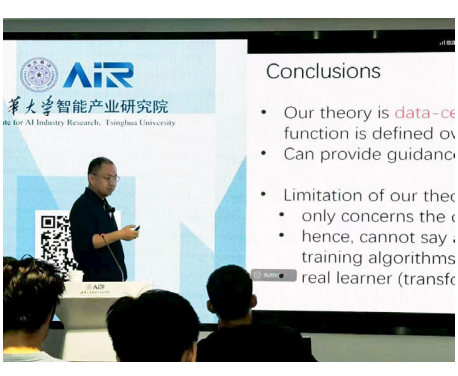




AIR regularly hosts a variety of academic activities to enhance scholarly exchange, promote interdisciplinary development, and elevate its academic influence.

Academic Lecture Series

In the first half of the year, we were honored to invite Professor Li Jian from the Institute for Interdisciplinary Information Sciences at Tsinghua University (also a tenured professor at Shanghai Jiao Tong University) and Associate Professor Chen Siheng from the School of Artificial Intelligence to present reports on their frontier research findings.

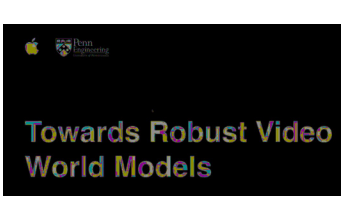


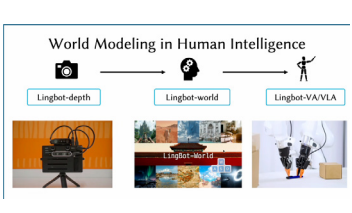


Young Scientist Forum

For the AIR Young Scientist Forum in the first half of the year, we were honored to invite Professor Dou Qi from the Chinese University of Hong Kong, Professor Gu Jiatao from the University of Pennsylvania, and Assistant Researcher Dr. Xu Yinghao from the Hong Kong University of Science and Technology to share their work with our faculty and students at AIR.







AIR Open Day

In April, the AIR DISCOVER Lab Open Day was held successfully. Focusing on frontier breakthroughs in embodied intelligence technology, the construction of a research ecosystem, and practical industrial implementation, the event was divided into morning and afternoon sessions featuring multiple presentations and live hardware demonstrations. The event also featured the high-profile release of the "GS-Playground" multi-modal simulation framework and the "DISCOVER Talent Program," providing a comprehensive presentation of the laboratory's full-chain layout and hard-core achievements in the field of embodied intelligence.






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