清華大學智能产业研究院
Institute for AI Industry Research, Tsinghua University

01 AIR Scientists

Academician Zhang Ya-Qin, Dean of AIR, Receives Chinese National Friendship Award

Professor Zhang Ya-Qin has dedicated himself to national scientific research innovation and public education for many years. He proposed a new model of innovative cooperation, launched the "Great Wall Program" at Microsoft to cultivate top scientific and technological talents for China, and was praised by the Premier as a model for multinational companies participating in China's independent innovation. He has received honors such as the "Special Contribution Award to Chinese Education" from the Ministry of Education, "Top Ten Innovative Figures" from the Ministry of Science and Technology, and "Overseas Returnee of the Year" from People's Daily. This award recognizes Professor Zhang Ya-Qin's outstanding contributions to the development of Chinese engineering science and technology and the cultivation of high-tech talents.

The Chinese National Friendship Award, established in 1991, is the highest award given by the Chinese government to foreign experts who have made outstanding contributions to China's modernization and reform and opening-up.



AIR Chief Scientist Professor Zhao Feng Elected as ACM Fellow

In January 2025, ACM announced the results of the 2024 annual selection, and Professor Zhao Feng, Chief Scientist of AIR, was elected as an ACM Fellow, in recognition of his contributions to the theories and practices of networked embedded sensing and the Internet of Things.



Dr. Cao Ting Joins AI+IOT Team of AIR



AIR has recruited Dr. Cao Ting, an outstanding female scientist, to serve as a researcher in the AIoT team. Dr. Cao Ting graduated from the Australian National University and previously served as a Principal Researcher and Manager of the Heterogeneous Computing Research Group at Microsoft Research Asia. She has long been committed to building high-energy-efficiency computing systems via hardware-software co-design, and has achieved a number of world-leading breakthroughs. She has won the Best Paper Award at top international conferences in the field, such as MobiSys and PPoPP, and has had a significant impact in both academia and industry.

Lan Yanyan Appointed as GDS Endowed Professor

On June 13th, AIR held the Tsinghua University GDS Endowed Professorship Appointment Ceremony. Mr. Huang Wei, Chairman of GDS, Ms. Liang Yan, Co-President, and Dean Zhang Ya-Qin of AIR jointly presented the appointment certificate to Professor Lan Yanyan. The "GDS Endowed Professor and Young Scholar" program was established in 2021 and has supported a number of internationally influential experts and promising young scholars at AIR. After selection and review by Tsinghua University, AIR PI Dr. Lan Yanyan was appointed as a Tsinghua University GDS Professor. Professor Lan Yanyan said: "I am very honored to be appointed as an Endowed Professor. GDS has always strongly supported AIR scholars in their cutting-edge scientific explorations, providing a good environment for dedicated research. In the future, I will continue to conduct research oriented towards international frontiers, major national needs, and solving practical industrial problems. I hope to continue to deepen cooperation with GDS to empower industries and cultivate talents to give back to society."



02 Talent Development

AIR Faculty Actively Participate in Talent Development, Offering Multiple High-Level Courses

AIR actively encourages faculty to participate in talent development and course instruction, gradually developing a multidisciplinary curriculum system that emphasizes characteristics such as interdisciplinarity, practicality, and internationalization. It transforms research advantages into talent development advantages, promoting the empowerment of teaching through artificial intelligence. In 2024-2025, several new high-level courses were offered, including Liu Yang's graduate AI certification program course, "Large Models and Generative Artificial Intelligence," Ma Jianzhu's "Intelligent Biocomputing" in the Department of Electronic Engineering, and "Introduction to Modern Artificial Intelligence" in the Qiuzhen College. Previously, Zhou Guyue also offered practical exploration courses for undergraduate students across the university, including "Intelligent System Design and Practice" and "From Intelligent Unmanned Aerial Vehicles to Flying Cars: Design and Practice" in the Basic Training Center (iCenter) and the School of Vehicle and Mobility, respectively.

Notably, Ma Jianzhu's "Intelligent Biocomputing" received an excellent rating, placing in the top 5% of all science and engineering courses in the university-wide course evaluation for the 2024-2025 autumn semester.



03 Research and Industry Partnership

Dec.

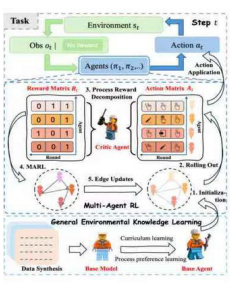
National Key R&D Program Project Team Holds 2024 Annual Meeting: On December 29, 2024, the project team for the National Key R&D Program, "Key Technology Standards Research and Application for Intelligent Computing of Heterogeneous Devices," held its 2024 annual work conference in Beijing. Zhang Ya-Qin, Dean of the Tsinghua Institute for AI Industry Research (AIR), delivered a speech. The conference summarized the relevant achievements of the annual work: completion of 3 national standard draft versions for comments, 4 group standards, publication of more than 20 academic papers, application for 10 invention patents, and acquisition of 5 software copyrights. Project experts Ding Wei, Professor Liu Jie of Harbin Institute of Technology, Professor Guo Minyi of Shanghai Jiao Tong University, Professor Chen Xiaojiang of Northwest University, and Professor Zhang Yanyong of the University of Science and Technology of China provided guiding opinions and suggestions on project implementation as participating experts.





Feb.

In February, AIR, in conjunction with Alibaba Cloud, the Department of Computer Science of Tsinghua University, and the Hong Kong University of Science and Technology, proposed the CollabUIAgents multi-agent cross-environment generalization reinforcement learning framework. This framework innovatively introduces a novel multi-agent credit re-assignment strategy to promote generalizable collaborative behavior between agents without role restrictions. The system trained based on this method, with a 7B-parameter base model, can achieve performance close to or exceeding systems based on commercial models such as GPT-4, and exhibits excellent cross-environment generalization capabilities, providing new directions and ideas for building more general and intelligent agent systems.



训练，APP类任务 （表示分布外环境效果提升值）

Method	Base model	#Params	#Agents	Input	$SR_{AndroidWorld}$	$SR_{MMiniWoB++}$	$\Delta_{Generalization}$
Agents based on Closed-Source LLMs							
M3A	GPT-4	N/A	1	Text	30.6	59.7	
M3A	GPT-4	N/A	1	Text & Image	25.4	**67.7**	
SeeAct	GPT-4	N/A	1	Text & Image	15.5	66.1	-
M3A	Gemini 1.5 Pro	N/A	1	Text	19.4	57.4	-
M3A	Gemini 1.5 Pro	N/A	1	Text & Image	22.8	40.3	-
Agents based on Open-Source LLMs							
Base Model	Qwen2	7B	1	Text	6.2	12.9	-
Base Model	Qwen2 VL	2B	1	Text & Image	0.0	10.0	-
InfiGUIAgent	Qwen2 VL	2B	1	Text & Image	9.1	15.6	5.6
Base Model	Qwen2.5 VL	3B	1	Text & Image	10.1	18.7	-
DigiRL	Qwen2.5 VL	3B	1	Text & Image	22.3	35.2	16.5
DigiRL	Qwen2.5 VL	3B	4	Text & Image	20.1	38.7	20.0
Our Methods							
Base UIAgent	Qwen2	7B	1	Text	18.9	48.4	35.5
Base UIAgent	Qwen2	7B	4	Text	21.4	53.2	40.3
$CollabUIAgents_{mobile}$	Qwen2	7B	4	Text	**29.3**	**61.2**	**48.3**

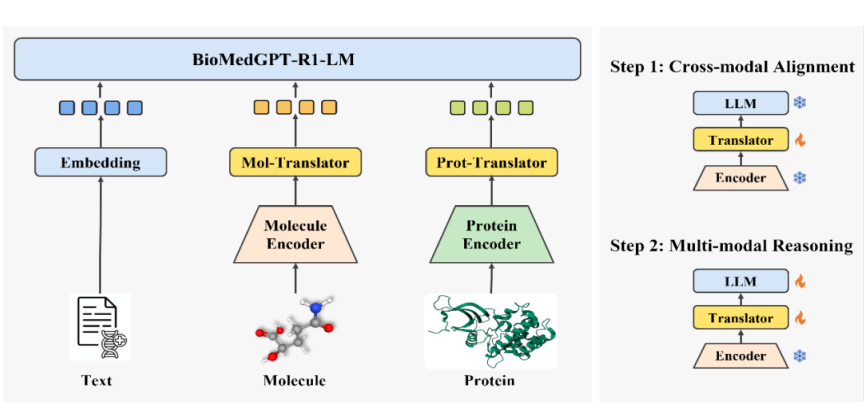
仅测试，移动端网页任务

移动终端UI环境中，**仅在AndroidWorld环境上训练**，在训练与分布外环境上，显著强于基线强化学习方法，**均接近或超过闭源模型单智能体效果**

» In February, AIR and AsiaInfo jointly released the Chinese and English versions of the "Evaluation Report on DeepSeek Empowering the High-Level Evolution of Autonomous Networks." This report is the first systematic evaluation report in the communications industry assessing the suitability of foundational large models such as DeepSeek for autonomous network applications. The report comprehensively evaluates the availability and suitability of DeepSeek and other foundational models for various application scenarios of autonomous networks from multiple basic capability dimensions, including semantic parsing, intent recognition, reasoning ability, autonomous planning, knowledge retrieval, and text generation. The report aims to provide a scientific basis and technical reference for the high-level evolution of autonomous networks empowered by foundational large models, and to help operators accelerate the development and evolution of autonomous networks towards L4+ levels.

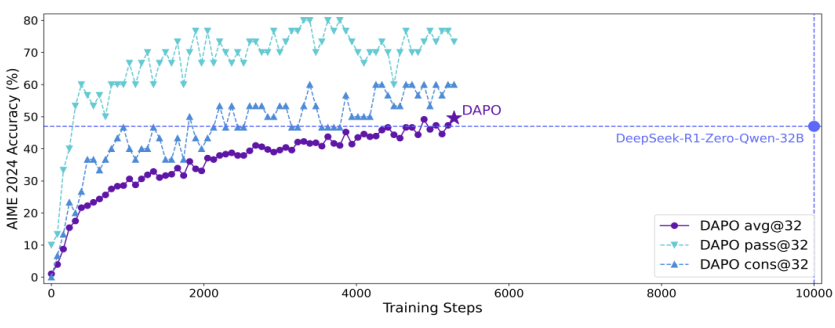


» In March, AIR and Pharmolix jointly launched the upgraded BioMedGPT-R1, a multimodal open-source foundation model for biomedicine, and the OpenBioMed, an open-source platform for biomedical intelligent agents. This open-source platform helps address the challenges of multi-task collaboration caused by the dispersion of biomedical research tools and data silos. Previously, in 2023, the two parties jointly released BioMedGPT, an open-source, commercially available, multimodal billion-parameter open-source foundation model for biomedicine. Since its release, BioMedGPT has been widely welcomed and praised by the open-source community and the industry-research community. Tsinghua University AIR and Pharmolix have also jointly published several academic papers on biomedical research scenarios at top international conferences such as ICML, NeurIPS, and KDD.



Mar.

In March, the SIA-Lab, a joint laboratory between AIR and ByteDance, open-sourced a large-scale LLM reinforcement learning system called Decoupled Clip and Dynamic sAmpling Policy Optimization (DAPO). After training with DAPO on the Qwen2.5-32B model, it achieved an excellent score of 50 on the AIME 2024 test set, surpassing DeepSeek-R1-Zero-Qwen-32B and reaching a new state-of-the-art (SOTA) result, with only half the training steps. The team has released the algorithm code, datasets, and complete technical details, providing an important tool for solving large-scale RL training challenges. The paper has generated significant interest and is becoming the most influential LLM RL algorithm after PPO and GRPO, with 141 citations within two months of its publication.



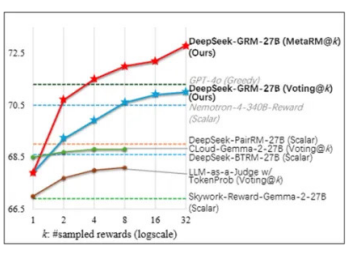
In March, AIR, together with Hisense, the China Video Industry Association, and the Zhongguancun Standardization Association, jointly released the industry's first "AI TV White Paper." This white paper points out the development direction of TVs in the new intelligent era, presents a new blueprint for users' AI TV experience, and calls on the industry to establish and improve relevant standards and technical mechanisms to create trustworthy next-generation intelligent products for users.

Apr.

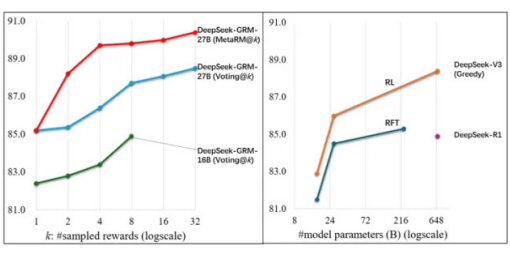
In April, the "Autonomy and Beyond: The Future of Intelligent Driving" high-level closed-door seminar, co-hosted by AIR and the World Economic Forum, was successfully held at the Sofitel Hotel in Shanghai Hongqiao. Many senior executives and industry leaders from well-known domestic and international companies gathered to discuss cutting-edge technologies and future development trends in the field of intelligent mobility. Academician Zhang Ya-Qin, Dean of AIR, attended the event and shared his views.



In April, AIR, in collaboration with DeepSeek-AI and the Department of Computer Science at Tsinghua University, proposed a novel method called SPCT, which significantly enhances the Inference-Time Scalability of general reward models. Based on this, they built the DeepSeek-GRM general reward model. In multiple benchmark tests, through inference-time scaling, this model not only surpassed large models with many times more parameters, such as Nemotron-340B, but also outperformed traditional training-time scaling methods in terms of performance. This achievement provides a practical solution to the long-standing challenge of reward modeling generality and inference-time scalability in language model development.



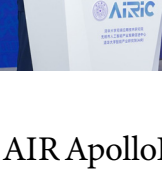
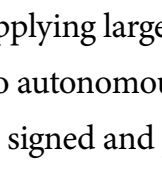
投票机制与元RM引导能够显著提升
DeepSeek-GRM 的性能



在推理阶段采用 32 次采样的 SPCT
其性能超越了在训练阶段使用 671B 模型的扩展方式

May.

In May, AIR, in conjunction with Tsinghua University's Qiuzhen College and the Department of Mathematics, proposed the AI Mathematician (AIM) framework. AIM was used to attempt independent solutions to four mathematically challenging research problems. Experimental results showed that AIM was able to basically solve two of the problems and obtain non-trivial conclusions on the other two, achieving a major breakthrough in using large models to assist in cutting-edge mathematical research and taking an important step in using artificial intelligence for complex mathematical theory research.

数学问题	AIM效果	部分证明步骤
量子算法问题 (结论已知) Quantum Algorithm Problem	AIM完成了带有详细分析推导过程的证明	
吸收边界问题 (结论已知) Absorbing Boundary Condition	AIM基本完成此问题的证明过程和细节	
高对比度极限 (结论已知) High Contrast Limit	AIM完成了主要结论的证明过程，并且证明了新的结论	
均匀化问题 (结论未知) Homogenization Problem	AIM给出了合理的证明思路和部分结论的证明，对数学工作者很有启发意义	

Jun.

On June 6th, the "2025 Taihu Dialogue · AI for Science" event was held in Binhu, Wuxi. Experts, scholars, and industry leaders from around the world gathered to discuss the future of technology and industry. Academician Rao Zihe of the Chinese Academy of Sciences and Professor at Tsinghua University, Academician Wang Xiaodong of the U.S. National Academy of Sciences, Foreign Academician of the Chinese Academy of Sciences, and Director of the Beijing Institute of Life Sciences, Foreign Academician Zhang Hongjiang of the U.S. National Academy of Engineering, Distinguished Visiting Professor at the Tsinghua Institute for AI Industry Research, and Academician Zhang Yaqin conducted a "Super Dialogue" around the theme of "Paradigm Shift of AI-Driven Scientific Research," jointly exploring the new future of AI+ development. Subsequently, three high-level roundtable forums were held, focusing on the themes of "What are the Major Breakthroughs in AI," "AI for Science," and "AI for Healthcare," providing a platform for in-depth exchanges between industry, academia, and research.









On June 6th, AIR upgraded and released AIR ApolloFM, the world's first open-source end-to-end autonomous driving system that supports real-vehicle deployment, applying large model capabilities and end-to-end technology to autonomous driving systems. AIR ApolloFM has already been signed and promoted for application by more than ten companies.

On June 6th, the AIR Wuxi Innovation Center signed a strategic cooperation agreement with Wuxi Internet of Vehicles Industry Development Group Co., Ltd. The jointly developed AIR ApolloFM 2.0 project, focusing on autonomous driving and embodied intelligence platforms, will promote the large-scale application of autonomous driving technology in real-world scenarios. Additionally, a strategic cooperation agreement was signed with Shanghai Touch Stone Technology Co., Ltd., where both parties will comprehensively promote in-depth cooperation in innovation research and development, talent exchange, and market expansion, focusing on embodied intelligence and robotics technology.





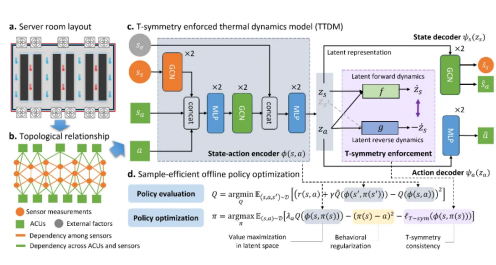
In June, the 2nd Multi-Agent Embodied Intelligence Systems Workshop (2nd MEIS Workshop @CVPR2025), coordinated by the DAIR Laboratory of the Tsinghua Institute for AI Industry Research, was successfully held. With the theme of "Multi-Agent Embodied Intelligence Systems in the Era of Generative AI: Opportunities, Challenges, and the Future," the workshop focused on the three major areas of autonomous driving, robotics, and unmanned aerial vehicles (UAVs). It explored the core challenges and cutting-edge breakthroughs in multi-agent collaborative intelligence: in the field of autonomous driving, V2X technology breaks through the limitations of single-vehicle intelligence through vehicle-to-vehicle/vehicle-to-infrastructure collaboration; robot clusters achieve efficient exploration of unknown environments; and UAV swarms demonstrate strong potential in formation performances, 3D printing, and air-ground cooperative tasks. Addressing key challenges such as cross-agent perception-prediction-planning full-link collaboration and high-quality dataset construction, the conference will combine the latest advancements in generative AI and foundational models to explore innovative solutions. The event included keynote reports from leading figures in academia (from institutions such as NVIDIA, Stanford University, and CMU), presentations of cutting-edge oral papers, and sharing of results from intelligent agent challenges, with the goal of discussing the future development of multi-agent collaborative intelligence with global scholars.



In June, the "Health Computing Joint Research Center" of the Tsinghua Institute for AI Industry Research (AIR) and the Beijing Academy of Artificial Intelligence (BAAI) released DrugCLIP,https://www.drugclip.com an AI-driven ultra-high-throughput virtual drug screening platform. This platform system was developed by Professor Lan Yanyan's team at AIR. DrugCLIP achieves a million-fold increase in screening speed compared to traditional methods, while also achieving significant breakthroughs in prediction accuracy. Relying on this platform, the team has opened up a crucial pathway from AlphaFold structure prediction to drug discovery, completing the first virtual drug screening covering the scale of the human genome, bringing new possibilities for innovative drug discovery in the post-AlphaFold era.



In the first half of 2025, AIR and GDS collaborated to successfully develop and implement the world's first AI system for energy consumption optimization in data center air-side cooling systems based on high-sample-efficiency, high-generalization offline reinforcement learning technology. The system has achieved over 2000 hours of safe and stable operation in large-scale commercial data centers, saving 14%-21% of energy in the data center air-side cooling system. This achievement has also received industry honors such as the "First Prize in the 2024 Shanghai Computing Power Network High-Quality Development Benchmark Application Case Competition" and the "Annual Innovation Award at the International Symposium on Computing Power Standards and Applications ISCT'24."





On June 30, AIR and Tairex co-hosted a press conference where Tairex officially launched Agent Hospital 1, an intelligent healthcare system powered by LLM agents. Tairex announced plans to accelerate the deployment of Simulacrum-based Evolutionary Agent Learning (SEAL) technology, aiming to deliver high-quality, affordable, and convenient medical services to the public. Agent Hospital 1 includes applications for patients, doctors, and hospitals, covering the full medical process. Evolvable agent technologies have been deeply integrated across these stages, enabling seamless intelligent services inside and outside the hospital, and facilitating efficient resource coordination between the demand and supply sides. Looking ahead, Tairex will initiate clinical validation, public testing, and pilot deployments of the Agent Hospital 1 system, with full-scale operations expected in the second half of the year. The company has already secured initial partnerships in Beijing, Jiangsu, and Guangxi, and is actively seeking further collaborations with healthcare institutions across other regions.



04 Academic Services

AIR has conducted multiple high-level academic exchange activities, building a cross-border dialogue platform to deeply connect global top-tier intellectual resources, and promoting a leap-forward improvement in AIR's academic and industrial influence. During the World Economic Forum Annual Meeting in January 2025, the Global Development and Cooperation of Artificial Intelligence Forum was held at the MIT Dome. Academician Zhang Yaqin delivered a keynote speech and discussed international cooperation with MIT Physics Professor Max Tegmark, Nobel Laureate Sir Demis Hassabis, Turing Award winner Yoshua Bengio, and Berkeley Computer Science Professor Dawn Song. As the scholar who first proposed "Artificial Intelligence is the cornerstone of the Fourth Industrial Revolution" nine years ago, Academician Zhang Yaqin believes that artificial intelligence is inherently the result of international cooperation. He stated that although the theoretical foundation of artificial intelligence development comes from Western countries, Chinese scientists and engineers have also made outstanding contributions. In addition, Academician Zhang Yaqin also attended The Business of Autonomous Vehicles forum as a keynote speaker, focusing on core issues related to the commercial prospects of autonomous driving with Dr. Raquel Urtasun, founder and CEO of Canadian company Waabi.





In March, Academician Zhang Ya-Qin had a dialogue with Nobel laureate Barry Marshall, discussing the broad prospects and technical challenges of AI for Medicine.



In April, Academician Zhang Ya-Qin attended the Hong Kong Jockey Club Scholarship Presentation Ceremony and High Table Dinner, delivering a keynote speech entitled "Thriving in the Age of AI." Jockey Club Chairman Li Zihou, Vice Chairman Liao Changjiang, presidents of the eight major universities in Hong Kong, and scholarship recipients attended the grand event.



In addition, Academician Zhang Ya-Qin also attended the Boao Forum for Asia Annual Conference 2025 and delivered multiple keynote speeches; discussed "Some Views on Unmanned Driving" at the China Electric Vehicle 100 Forum; and engaged in in-depth dialogues with a number of authoritative experts from academia and business, including Sohu Chairman and CEO Zhang Chaoyang, and Liu Ke, Dean of the Innovation and Entrepreneurship College of Southern University of Science and Technology and Foreign Academician of the Australian Academy of Engineering, promoting a leap-forward improvement in AIR's academic and industry influence.





《Intelligent Emergence: Transformations and Reflections in the Age of AI》

In March 2025, "Intelligent Emergence: Transformations and Reflections in the Age of AI," the latest masterpiece by Zhang Ya-Qin, Dean of AIR and Academician of the Chinese Academy of Engineering, the American Academy of Arts and Sciences, and the Australian Academy of Engineering, was officially published and released. Today, humanity is in the midst of profound changes unseen in a century, and artificial intelligence is profoundly changing the world. In this book, Zhang Ya-Qin presents his latest judgment on the world entering a cycle of integrated innovation of information intelligence, physical intelligence, and biological intelligence, as well as his forward-looking reflections on the latest technologies such as large models, ChatGPT, and DeepSeek, and future development trends.

The future is the era of "Artificial Intelligence +." The book discusses in detail the roadmap for the integration and implementation of artificial intelligence with industries such as life sciences, green computing, embodied intelligence, and autonomous driving, revealing the huge commercial space and growth opportunities contained in China's artificial intelligence industry in the AI era. As a professor at Tsinghua University, Zhang Ya-Qin also provides a panoramic interpretation of the roles and responsibilities of industry, academia, and research in the Fourth Industrial Revolution, and elaborates on the paths for universities, research institutions, and enterprises to stimulate innovation and make disruptive technologies. Whether you are a technology enthusiast or a practitioner, you can gain inspiration from this book, grasp technology trends, and embrace the future.



On May 10th, Professor Liu Yunxin was invited to attend the CCF 18th International Conference on Service Science (CCF ICSS 2025) and delivered a keynote speech entitled "On-Device AI: Empowering Every Device with AI."



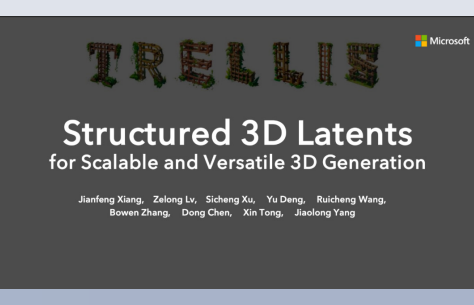
In June, the third "Qingzhi Empowerment · Scholars Salon" event was held at the Faculty Development Center. Tsinghua University GDS Professor and Chief Researcher of the Institute for AI Industry Research (AIR), Lan Yanyan, was invited to be the sharing guest, giving a presentation on "AI-Empowered Innovative Drug Discovery." Wang Renmo, Deputy Director of the Faculty Affairs Department, hosted the event.

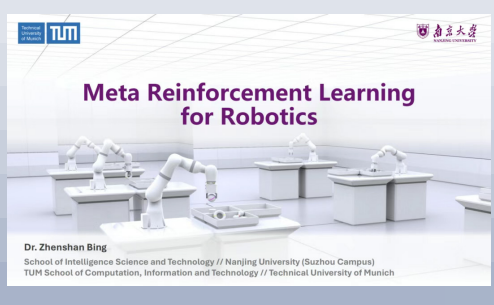


AIR regularly organizes various academic activities to enhance academic exchanges, promote discipline development, and increase academic influence.

Dialogue with Masters

We were honored to have Dr. Li Hang from ByteDance give us a report entitled "Advancing New Frontiers in Artificial Intelligence." Seven sessions of the Young Scientists Forum were held, inviting Dr. Xue Tianfan, Assistant Professor of Information Engineering at the Chinese University of Hong Kong; Wang Ziwei, Assistant Professor of the School of Electrical and Electronic Engineering at Nanyang Technological University; Dr. Zhu Siyu, Researcher and Tenured Professor of the Institute of Artificial Intelligence Innovation and Industry at Fudan University; Dr. Bing Zhenshan, Senior Researcher at the Technical University of Munich; Rao Anyi, Assistant Professor of the Department of Art, Machine and Creativity and the Department of Emerging Interdisciplinary Areas at the Hong Kong University of Science and Technology; Dr. Yang Jiaolong, Chief Researcher and Research Manager at Microsoft Research Asia; and Dr. Wen Bowen, Senior Researcher at NVIDIA.









扫一扫 关注我们