中国智·惠世界（2026）

AI From China Benefits The World (2026)

序言 | PREFACE

习近平主席强调：“人工智能对未来发展具有重大意义，应该使之为各国各地区人民造福。我们要以全人类福祉为念，推动人工智能朝着有益、安全、公平方向健康有序发展。”

当前，人工智能正加速从技术突破走向广泛落地，在赋能发展、守护安全、普惠共享中展现巨大潜力，日益成为增进人类福祉、推动可持续发展的重要引擎。

2026 世界人工智能大会暨人工智能全球治理高级别会议召开之际，我们编写了《中国智 · 惠世界（2026）》案例集，收录 10 个中国人工智能技术与产品国际合作的生动实践：从智能奥运到解码地球，AI 秉持开放共享；从橡胶加工、智慧农场到电网运维、绿色通信，AI 加速产业升级；从癌症筛查、海洋寻药到智慧出行、防灾减灾，AI 改善民生福祉……人工智能正朝着更加负责任的方向演进，在促进智能普惠、推动全球共治的进程中，一系列跨越国界、互惠互利的“中国方案”不断涌现。

这些案例告诉我们，智能的深度在于连接。每一次跨国的技术握手，每一个落地的民生项目，都记录下人类命运共同体的生动实践。通过案例集，我们希望传递一个真诚的信号：中国始终秉持共商共建共享理念，与各国携手前行，让人工智能成果温暖世界每一个角落。

2026 年 7 月

Chinese President Xi Jinping has stressed: "AI is very important for shaping the future, and should contribute to the well-being of people of all countries and regions. We should bear in mind the well-being of the entire humanity, and promote the sound and orderly development of AI while ensuring that it is beneficial, safe and fair."

At present, AI is rapidly moving from technological breakthroughs to widespread application, demonstrating tremendous potential in empowering development, safeguarding security and ensuring the inclusive sharing of benefits. It is increasingly becoming a powerful engine for enhancing human well-being and advancing sustainable development.

On the occasion of the 2026 World AI Conference & High-Level Meeting on Global AI Governance, we have compiled this collection of case studies, AI from China Benefits the World (2026), featuring 10 vivid examples of international cooperation in Chinese AI technologies and products: from the smart Olympics to the decoding of the Earth, AI upholds openness and sharing; from rubber processing and smart farms to power grid operation and maintenance and green communications, AI accelerates industrial upgrading; from cancer screening and marine biopharmaceutical research to smart mobility and disaster prevention and mitigation, AI improves public welfare... AI is evolving in a more responsible direction. In the process of promoting intelligent inclusion and global governance, a series of mutually beneficial cross-border Chinese solutions have continued to emerge.

These cases tell us that the depth of intelligence lies in connection. Every cross-border technological collaboration and every livelihood project realized bears witness to a community with a shared future for humanity in action. Through this collection of cases, we hope to convey a sincere message: China is committed to the principle of extensive consultation, joint contribution and shared benefits, and stands ready to move forward hand in hand with all other countries to ensure that the fruits of AI bring warmth to every corner of the world.

July 2026

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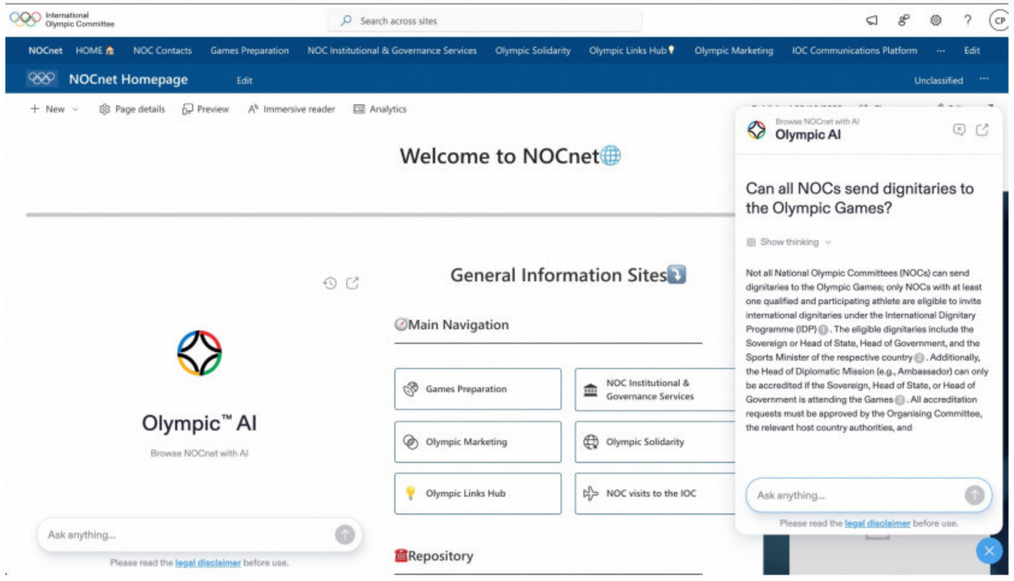


国家奥委会 AI 助手

The National Olympic Committee AI Assistant.

阿尔卑斯群山间，一位自由式滑雪运动员腾空而起，在空中完成高难度转体动作。与此同时，在赛场大屏与全球转播信号中，一道“时空切片”特效将运动员的连续动作轨迹定格在单张画面中，让观众清晰看到那些肉眼难以捕捉到的细节。

这并非科幻电影中的虚拟特效，而是 2026 年米兰冬奥会的真实场景。在这场跨越百年的体育盛会背后，一场由人工智能驱动的深刻变革正在悄然发生。作为奥林匹克全球合作伙伴，中国企业阿里云以 AI 驱动的云计算全球网络，为米兰冬奥会装上了“智能大脑”，开启了“智能奥运”新时代。

High in the Alps, a freestyle skier launches into the air and performs complex aerial spins. In the meantime, across the venue's giant screens and the global broadcast feed, a time-slice motion trail effect freezes the skier's entire set of motion onto a single frame, allowing viewers to clearly see split-second details that the naked eye could not capture.

This is not computer-generated imagery from a science-fiction film, but a real scene from the Milan-Cortina 2026 Olympic Winter Games. Behind this centenary sporting gala of the Olympic Movement, a profound, AI-driven transformation is quietly unfolding. As a Worldwide Olympic Partner, Chinese company Alibaba Cloud equipped the Winter Games with a "smart brain" and ushered in a new era of intelligent Olympics through its AI-powered global cloud-computing network.

让奥运“更聪明”：首个奥运官方大模型诞生

一位来自巴西的冬奥代表团工作人员第一次来到意大利参加冬奥会。面对分散在多个城市的比赛场馆、复杂的赛事安排、大量外语官方文件，他一度感到无从下手。

“我们代表团需要申请额外的训练场地，流程是什么？”他试着用葡萄牙语向电脑中的 AI 助手提问。几秒钟后，屏幕上不仅出现了完整的申请流程，还自动附上表格下载链接和截止时间。

这是米兰冬奥会上真实发生的一幕。2026 年 2 月 5 日，国际奥委会主席柯丝蒂·考文垂宣布：国际奥委会基于千问大模型，打造了奥运史上首个官方大模型，并在专业赛务与公众服务双端同步落地。

在专业赛务侧，“国家奥委会 AI 助手”面向各国奥委会工作人员开放。AI 助手依托千问大模型的多语言理解能力，不仅“读”透了数百万字官方手册、规则文档和赛事指南，还支持 119 种语言的实时交互，大幅提升了全球代表团的备赛协同效率，让“中国标准”成为解决

Making the Olympics Smarter: The Debut of the First Official Olympic Large Language Model

A staff member of Brazil's Olympic delegation traveled to Italy for the first time for the Winter Games. Confronted with competition venues scattered across multiple cities, a complicated event schedule and numerous official documents in foreign languages, he initially found himself completely overwhelmed.

"Our delegation needs to apply for additional training venues. What's the procedure?" he asked, posing the question in Portuguese to the AI assistant on his computer. Within seconds, the screen displayed not only the complete application procedure, but also a download link for the relevant forms and the deadline.

This was a scene that genuinely played out at the Milan-Cortina 2026 Olympic Winter Games. On February 5, 2026, International Olympic Committee (IOC) President Kirsty Coventry announced that built on the Qwen Large Language Model, the IOC had created the first official large model in Olympic history, and deployed it

国际大型赛事管理难题的优选方案。

在公众服务侧，奥林匹克官网（Olympics.com）同步上线“奥运 AI 助手”，为全球观众实时、精准解答赛事规则、奥运历史等各类问题。

考文垂指出：“千问大模型技术将为奥运带来更智能的运营、更深入的互动，并为奥林匹克运动带来新的可能性。”

让精彩被看见：AI 重新定义冬奥转播

在奥林匹克的历史上，高昂的转播成本与技术门槛，曾让许多国家难以全方位地记录和传播奥运精彩。AI 技术正在打破这一壁垒，千问大模型深度赋能米兰冬奥会的直播与内容生产环节。

通过奥运直播云 OBS Live Cloud 平台，奥林匹克转播公司（OBS）支持了全球 42 家持权转播机构，提供了 442 路直播视频信号；Content+ 平台更是向全球发布了超过 5000 条精华短片，让千家万户都欣赏到了冬奥精彩。

simultaneously across both professional Games operations and public services.

On the professional operations side, the National Olympic Committee AI Assistant was made available to staff from National Olympic Committees around the world. Drawing on the Qwen model's multilingual comprehension, the assistant has not only "read" its way through millions of words of official handbooks, rule documents and event guides, but also supported real-time interaction in 119 languages. It dramatically boosted the efficiency of global delegations in coordinating their preparations for the Games, and made "Chinese standard" a preferred solution for tackling the management challenges of major international events.

For providing public services, the official Olympic website (Olympics.com) simultaneously launched the "Olympic AI Assitant," providing audiences worldwide with real-time, precise answers to all sorts of questions, from competition rules to Olympic history.

"Thanks to the technology of Qwen, the Milan-Cortina 2026 Olympic Winter Games will deliver smarter operations, deeper engagement and new possibilities for the Olympic Movement," Coventry said.

阿里云工程师在米兰冬奥场馆内工作

Alibaba Cloud engineers work in a stadium during the Milan-Cortina 2026 Olympic Winter Games.

能 AI 算法处理的运动员滑动轨迹图

The athlete's motion trajectory picture processed by AI algorithms.

这种“普惠”并非降低标准，而是全力以赴通过不同技术手段全面提升视频质量。面对冬奥会雪地强烈反光、运动员速度极快、比赛赛程极短等难题，研发团队选择从运动的核心物理特征入手进行建模，并以创造性的方式开展测试。

为模拟钢架雪车、雪橇等高速项目，团队用园区里最普通的小推车代替专业设备，由同事推车奔跑、拍摄动作，再通过后期处理还原高速滑降场景；对于自由式滑雪大跳台等重点项目，团队专程前往滑雪场，开展各种动作组合与特效叠加方案的实地测试。经过持续优化，团队研发出适应极端冰雪环境的新一代识别模型。冬奥期间，系统实现零故障运行，共生成 23176 条回放内容，其中 3000 余条被 OBS 主信号和各国电视台采用。

与此同时，项目团队还围绕“更震撼的视觉呈现”这一目标，打造出全新的 360 度实时回放系统。一方面，在全球首次实现“时间切片 + 自由视角”融合，让运动员起跳、腾空、转体、收身的关键节点能像花瓣一样在三维空间中铺开；另一方面，团队实现了将“看不见的物理法则”变成可视的语言，将腾空高度、滞空时间、速度等关键指标实时呈现在画面中，使原本专业复杂的技术动作变得直观易懂。

曾经需要高成本才能实现的视觉魔术，如今通过云端算力，让全球持权转播商都能轻松获取，让世界各地的观众都能身临其境地看清冰雪运动之美。

让世界共同参与：
AI 拉近奥运与亿万体育迷的距离

冬奥会开幕前夕，全球首个官方奥运粉丝 AIGC 互动项目——阿里云米兰冬奥会 AIGC 全球大赛正式启动，让全球 80 亿普通民众拥有

Bringing the Brilliance to Light: Winter Olympic Broadcasting Redefined by AI

Throughout Olympic history, prohibitive broadcasting costs and high technological barriers have made it difficult for many countries to fully capture and share the brilliance of the Olympics. AI technology is breaking down that barrier, and Qwen model is deeply empowering the live broadcasting and content production at the Milan-Cortina 2026 Olympic Winter Games.

Through the OBS Live Cloud platform, Olympic Broadcasting Services (OBS) supported 42 rights-holding broadcasters worldwide and delivered 442 live video feeds, while its Content+ platform released more than 5,000 highlight clips to global audiences, bringing the excitement of the Winter Olympics to countless households.

This model of inclusive coverage did not come at the cost of compromised technical standards. On the contrary, the team spared no effort to improve video quality across the board through a range of technological approaches. Faced with challenges unique to the Winter Games, such as severe glare off the snow, the extreme speed of the athletes and the short duration of each event, the team chose to start from the core physical characteristics of motion to build their models and run their tests in innovative ways.

To simulate high-speed events like skeleton and luge, the team improvised by replacing professional gear with the most ordinary push cart, filmed the motion while a colleague pushed the cart, and then used post-processing to recreate the high-speed downhill scenes. For major events such as freestyle skiing big air, the team traveled to the ski slopes to conduct field tests of various combinations of movements and overlaid visual effects. After continuous refinement, the team developed a new-generation recognition model to handle the extreme conditions of ice and snow. During the Winter Games, the system ran with zero failures, generating a total of 23,176 replay clips, of which more than 3,000 were picked up

了“参赛”的可能性。

大赛吸引近 130 个国家和地区的用户参与。借助万相大模型，用户只需输入自然语言，即可生成花样滑冰、短道速滑、高山滑雪、单板滑雪等主题的冬奥短视频。长城、兵马俑、“大圣滑雪”等充满创意元素的作品不断涌现。最终，近 15000 份作品中的精选片段被汇聚成米兰冬奥开幕宣传片《Your Epic Vibe》，成为奥运史上首个 AIGC 数字艺术作品，并纳入奥林匹克博物馆馆藏。

国际奥委会首席信息科技官伊拉里奥·科尔纳表示：“2026 年米兰冬奥会是人工智能融入奥林匹克运动的重要里程碑。中国企业将领先技术落地于一系列切实可行的应用场景——不仅通过‘奥运 AI’显著提升全球粉丝的日常互动体验，还打造了如‘体育 AI’等智能系统，为后世完整保存具有历史意义的奥运时刻”。

每一届奥运会都会留下独特的遗产，而米兰冬奥会的遗产或许是智能化。这份来自中国的 AI 技术与能力，在刷新奥林匹克技术高度的同时，也为全球数字经济合作与智能社会发展写下了一份开放、包容、普惠、共享的中国答卷。（高婧妍）

by the OBS main feed and television networks around the world.

At the same time, in pursuit of more stunning visuals, the team built an entirely new real-time 360-degree replay system. On one hand, it achieved the world's first fusion of time slice and free viewpoint, letting the key moments of an athlete's takeoff, flight, rotation and tuck unfold across three-dimensional space like the petals of a flower. On the other hand, the team turned the invisible laws of physics into a visible language, showing key metrics such as jump height, hang time, and speed in real time on screen, making complex, highly technical maneuvers easy to grasp.

Thanks to cloud-based computing power, the kind of visual magic that once required huge budgets was made readily available to rights-holding broadcasters, allowing audiences around the world to see the beauty of winter sports in detail as if they were there.

Engaging the Entire World: AI Bringing the Olympics Closer to Billions of Fans

Before the opening of the Winter Games, the first official Olympic fan engagement initiative in the world — Alibaba Cloud AIGC Championship @ Milan-Cortina 2026 Olympic Winter Games — was launched, opening up an opportunity for the world's

奥运史上首个 AIGC 数字艺术作品、米兰冬奥开幕宣传片《Your Epic Vibe》

Your Epic Vibe, the first AIGC digital artwork in Olympic history and the opening film for the Milan-Cortina 2026 Olympic Winter Games.

8 billion people to take part in the Games creatively.

The competition drew users from nearly 130 countries and regions. Using Tongyi Wan video generation model, participants needed only to enter a natural-language description to generate short Winter Olympic videos on themes such as figure skating, short track speed skating, alpine skiing, and snowboarding. Works brimming with creative flair poured in, with some clips featuring the Great Wall, the Terracotta Warriors, and even a skiing Monkey King. In the end, selected highlights from nearly 15,000 submissions were woven together into the Winter Games' opening film "Your Epic Vibe," the first AIGC digital artwork in Olympic history and now part of the permanent collection of the Olympic Museum.

Ilario Corna, IOC's Chief Information Technology Officer, said: "The Milan-Cortina 2026 Olympic Winter Games marks a defining moment in the integration of AI into the Olympic Movement. Chinese enterprises have deployed cutting-edge technologies across a wide range of practical application scenarios — not only enhancing the everyday interactive experience for global fans through the Olympic AI, but also building intelligent systems such as Sports AI that will preserve historic Olympic moments for generations to come."

Every edition of the Olympics leaves behind a distinctive legacy. The legacy of the Milan-Cortina 2026 Olympic Winter Games may well be intelligence. AI technologies and capabilities from China have raised the technological bar of the Olympics, and have also written an open, inclusive, universally beneficial, and jointly shared Chinese solution to the questions of global digital economy cooperation and the advancement of intelligent society. (Gao Jingyan)

“智能钥匙”助力破解地球密码

A "Smart Key" Helps Unravel the Mysteries of Earth

GeoGPT有效汇聚了地学研究多源异构数据

GeoGPT effectively integrates multi-source heterogeneous data from geoscience research.

2025 年 7 月，GeoGPT 在“人工智能造福人类全球峰会”上展示
In July 2025, GeoGPT is showcased at the AI for Good Global Summit.

2025 年 7 月上旬，瑞士日内瓦 Palexpo 展览馆内人声鼎沸，“人工智能造福人类全球峰会”正迎来第六次盛会。

峰会上，一个由之江实验室主导打造的地学领域基础模型 GeoGPT 引起了全球专家的关注，并获得国际电信联盟颁发的优秀创新实践案例奖。

作为服务全球地学科研工作者的科技公共产品，GeoGPT 通过开源开放、国际合作，深度融入全球创新网络，成为中国积极参与“AI+”国际合作的生动实践。

“AI+ 科研”打造地学研究新范式

在地球 46 亿年的沧桑历史中，隐藏着无数关于生命起源、演化和气候变迁的秘密。探进地球“深部”，探索地球奥秘，正是地学科研工作者的使命和追求。

然而当前地学研究面临一系列挑战：数据多源异构、海量长尾数据难以有效关联，学科壁垒导致的知识融合障碍……而 AI 或是可以破局的关键。

打造 GeoGPT 的初衷正是源自地球科学研究的真实需求。作为一个专门为地球科学研究开发的科技公共产品，GeoGPT 旨在推动地球

In early July 2025, the Palexpo in Geneva, Switzerland, was filled with crowds and lively discussions as it hosted the 6th AI for Good Global Summit.

At the summit, GeoGPT, a geoscience foundational model spearheaded by Zhejiang Lab, drew the attention of global experts and was honored with the Outstanding Innovative Practice Case Award 2025 issued by the International Telecommunication Union.

As a public technological good designed to serve earth science researchers worldwide, GeoGPT has woven itself into the global innovation network through open-source sharing and international collaboration, a vivid example of China's active engagement in "AI+" international cooperation.

AI+Research: Forging a New Paradigm for Geoscience Research

Over the course of the Earth's 4.6-billion-year history, countless secrets about the origins of life, biological evolution and climate change lie buried. Probing the deep interior of our planet and unraveling its mysteries is the mission and pursuit of geoscience researchers.

Yet, today's geoscience research is facing a set of challenges, including heterogeneous data from multiple sources, difficulties in effectively linking massive volumes of long-tail data, and obstacles to knowledge integration arising from disciplinary silos. AI might be the key that can break through these impasses.

科学研究范式变革，吸引了国内外 25 家机构、400 余名地学专家的共同参与。

据了解，GeoGPT 融合了深时数字地球数据与智能算法，具备文献解析与数据抽取、领域知识图谱构建、个性化知识助手、地质图识别与问答、科研创意生成等多项功能。

2025 年 4 月，GeoGPT 正式面向全球开放，截至目前已服务 145 个国家和地区的 5.5 万名地学领域科研工作者。

开放的价值，只有回到真实科研场景中才能得到验证。GeoGPT 服务地学研究的案例，已经从“暗数据”治理、古生物识别等方面，展示了 AI 技术如何转化为可共享、可复用、可协作的科研基础设施。得益于浙江深时数字地球国际研究中心的支持与推动，GeoGPT 与全球顶尖团队开展了多项合作。

在古生物研究领域，GeoGPT 团队与美国普渡大学教授詹姆斯·奥格团队开展合作，针对国际古生物学权威专著《无脊椎古生物学论丛》50 卷、近 3 万页非结构化 PDF 电子文件，首次实现了从段落文本到结构化数据库的高通量自动化提取，将原本需数十年人工整理的“暗数据”变为全球公开可用的 FAIR（即可发现、可访问、可互操作和可重用）知识库，为研究生物大灭绝、演化动因及预测未来环境变化提供了前所未有的数据基础设施。

GeoGPT was developed in response to the real-world demands of earth science research. As a public technological good developed specifically for geoscience research, GeoGPT aims to drive paradigm shifts in geoscience research. The model attracted the participation of over 400 geoscience experts across 25 institutions in China and abroad.

GeoGPT integrates Deep-time Digital Earth data with intelligent algorithms, offering a wide range of capabilities: document parsing and data extraction, domain-specific knowledge graph construction, personalized research assistance, geological map recognition and Q&A, and research idea generation.

In April 2025, GeoGPT officially opened to users worldwide. To date, it has served 55,000 geoscience researchers across 145 countries and regions.

The value of openness can only be validated in real research settings. GeoGPT's applications in geoscience research, spanning fields such as "dark data" governance and paleontological identification, have already demonstrated how AI technology can be transformed into shareable, reusable and collaborative scientific infrastructure. With the support and facilitation of the Zhejiang Deep-time Digital Earth International Research Center, GeoGPT has forged collaborative projects with leading teams worldwide.

In the field of paleontology, the GeoGPT team, in collaboration with a team led by Professor James Ogg of Purdue University, has for the first time enabled high-

2026 年 4 月，美国普渡大学教授詹姆斯·奥格介绍 GeoGPT 合作项目

In April 2026, Professor James Ogg of Purdue University introduces the collaboration with the GeoGPT team.

之江实验室研究员在肯尼亚面向非洲伙伴开展 GeoGPT 离线培训

A researcher from Zhejiang Lab conducts an offline GeoGPT training session for African partners in Kenya.

英国地质调查局前首席科学家、“深时数字地球”国际大科学计划管理委员会创始主席迈克·斯蒂芬森致力于推进 AI 在地球科学，特别是古生物学领域的应用。斯蒂芬森依托 GeoGPT 构建了古生物分类助手智能体，覆盖《孢子和花粉化石的属别专著》所有属（4000+属别），远超传统孢粉学家人力所能掌握的 100 至 300 属别，帮助孢粉学家进行孢子、花粉化石的识别与鉴定，并将鉴别时间压缩至原有方法的 1% 以下，相关工具已在 zero2x 平台部署上线。

throughput automated extraction of structured data from nearly 30,000 pages of unstructured PDF files spanning the 50-volume "Treatise on Invertebrate Paleontology," a globally recognized authoritative work in paleontology. This would have taken decades of manual effort to transform into a globally accessible FAIR (Findable, Accessible, Interoperable and Reusable) knowledge base, providing an unprecedented data infrastructure for studying mass extinction events, evolutionary drivers and future environmental change.

Michael Stephenson, former executive chief scientist of the British Geological Survey and founding president of the Deep-time Digital Earth international big science program, has devoted himself to advancing the application of AI in earth science, particularly in paleontology. Building on GeoGPT, Stephenson developed an AI agent for paleontological classification that covers all genera in the "Genera File of Fossil Spores and Pollen," with more than 4,000 genera in total, far exceeding the 100 to 300 genera that an average palynologist could reasonably master. The tool helps palynologists identify and classify fossil spores and pollen, compressing identification time to less than 1% of what conventional methods require. It has since been deployed on the zero2x platform.

“全球共治”开启 AI 治理合作新空间

把 AI 作为造福人类的国际公共产品，不能只解决“能不能用”的问题，还要回答“是否可信、可靠、可控”“如何促进‘负责任创新’”等问题。

2024 年底，一个独立、国际化的 GeoGPT 治理委员会正式成立，负责监督模型研发过程中的伦理合规性，保障 GeoGPT 的诚信可靠、数据隐私、公平性与科学透明度。

治理委员会由来自美国、英国、法国、加拿大、巴西等国家的七位国际专家组成。在治理委员会的监督指导之下，GeoGPT 在向全球开放使用的同时，开源了模型权重参数和训练数据源列表，并实现了在 DeepSeek、Qwen、021 科学基础模型等多个开源基础模型上的训练。

在 2026 年 4 月举行的治理委员会年会上，成员们表示，GeoGPT 作为知识与推理引擎的技术路径已逐步清晰，多模态、地图交互与智能体等能力展现出较强潜力。与此同时，科学应用案例开始彰显真实科研价值与应用前景，各平台已初步形成“AI+ 地球科学”的体系化雏形。

Shared Global Governance: Opening New Horizons for AI Governance Cooperation

For AI to function as an international public good that genuinely benefits humanity, simply being useful is not enough; it should also answer whether it is trustworthy, reliable and controllable, and how it can foster responsible innovation.

In late 2024, an independent, international GeoGPT Governance Committee was formally established to oversee ethical compliance throughout the model's development and to safeguard its integrity, data privacy, fairness, and scientific transparency.

这种“开放能力＋开放规则”的模式，使 GeoGPT 的国际合作不只是工具推广，而是共同建设、共同监督、共同受益的开放科学实践。它既体现了国际社会对中国开放科学实践的信任，也为破解 AI 领域的“技术壁垒”和“数据孤岛”提供了可参考的实践样本。

赋能全球科研 共享 AI 技术新成果

上传地质地图、遥感资料、科研文献，模型即可辅助完成数据解析、信息关联和知识推理……2025 年 9 月，在肯尼亚举行的一场科学工作坊上，之江实验室科研人员巴·穆罕默德·贾沃德正面向非洲地学研究者演示 GeoGPT。

“我们已经与非洲伙伴合作两年多，未来希望将培训人数扩大到 2 万人以上。”贾沃德说。

尼日利亚地理信息系统分析师沙德拉奇·谢里夫在使用 GeoGPT 后表示：“传统地质地图生成工具流程复杂、学习曲线陡峭，通常需要系统培训和丰富经验，并非所有地球科学家都具备这些条件。人工智能模型正通过基于文本交互的地质地图生成技术来改变这一领域。”

GeoGPT 通过打造安全、可靠的开源平台，降低技术创新和应用门槛，使科研资源相对有限的国家和地区也能便利使用先进的科研基础资源、参与科研协作、共享 AI 发展成果。

从服务全球地学研究，到国际专家共同治理，再到面向全球开展技术和资源共享，GeoGPT 是中国方案推动 AI 技术开源可及、参与全球科技治理的又一缩影。（丁蕾）

The committee comprises seven international experts from the United States, the United Kingdom, France, Canada, Brazil and other countries. Under the supervision and guidance of the Governance Committee, GeoGPT has opened access to users worldwide and made its model weights and training data source list publicly available. Training has also been realized on multiple open-source foundation models, including DeepSeek, Qwen and the 021 Science Foundation Model.

At the committee's annual meeting in April 2026, members noted that GeoGPT's technical roadmap as a knowledge-and-reasoning engine had grown increasingly clear, with multimodal capabilities, map-interaction features and agent functions all showing strong potential. Meanwhile, scientific application cases were beginning to demonstrate real research value and bright prospects, and an early-stage "AI+Geoscience" system was taking shape.

This model of open capabilities and open rules elevates GeoGPT's international collaboration beyond mere tool promotion; it is an open science practice of collective development, joint oversight and shared benefits. It reflects the international community's trust in China's open science initiatives, while offering a replicable model for dismantling the technological barriers and data silos in the AI field.

Empowering Global Research, Sharing the Latest Fruits of AI Technology

After uploading a geological map, remote-sensing data and a scientific document, the model helped analyze the data, correlate information and make knowledge-based inferences. In September 2025, at a scientific workshop held in Kenya, Zhejiang Lab researcher Mohamed Jaward Bah was demonstrating GeoGPT to an audience of African geoscience professionals.

"We've been working with our African partners for more than two years now, and we hope to expand our training reach to over 20,000 people in the future," Mohamed Jaward Bah said.

Shadrach Sheriff, a geographic information system analyst from Nigeria, said after using GeoGPT: "Traditional geological map generation tools involve complex workflows and steep learning curves, and they typically demand systematic training and extensive experience that not every geoscientist possesses. AI models are transforming this domain through prompt-based geological map generation."

By building a secure, reliable open-source platform, GeoGPT lowers the barriers to technological innovation and application, enabling countries and regions with relatively limited research resources to access cutting-edge scientific infrastructure, join global research collaborations and share the fruits of AI development.

From serving global geoscience research and promoting shared governance by international experts to sharing technology and resources with the world, GeoGPT stands as another microcosm of how Chinese solutions are advancing open, accessible AI and engaging in global science and technology governance. (Ding Lei)

“智慧小院”焕新巴西家庭农场

"Smart Courtyards" Breathe New Life into Brazilian Family Farms

在巴西利亚“科技小院”安装的物联网监测终端

Internet-of-Things monitoring terminals are set up at the Sciences and Technology Courtyard in Brasília.

在巴西投用的"智能农场管理平台"

The smart farm management platform in use in Brazil.

位于巴西首都巴西利亚乡村的 FAL 家庭农场田垄平展整齐，田地不远处一排白色工房内，巴西利亚科技小院巴方负责人塞尔吉奥·绍尔教授正盯着墙上跳动着各种数据、土壤墒情图的大屏。

当绍尔发现西北角地块的湿度值即将跌破预警线，就迅速拖动鼠标划定灌溉区域，设置 25 分钟灌溉时长，再轻点"启动"按钮。几乎同时，十几里地外的田间灌溉设备电磁阀随即自动开启，水流喷洒向麦田。这就是中国巴西携手共建的智慧农业"科技小院"日常工作的一个小小缩影。

On the FAL family farm in the countryside of Brasília, the capital city of Brazil, neatly arranged ridges stretched across the fields. Inside a row of white buildings not far away, Professor Sérgio Sauer, head of the China-Brazil Technology Courtyard program on the Brazilian side, was watching a large screen on the wall flickered with all kinds of data and a soil-moisture map.

When Sauer noticed that the moisture level in a plot in the northwest corner was about to fall below the warning line, he quickly dragged his mouse to mark out the irrigation zone, set the irrigation time to 25 minutes, and tapped the "Start" button.

"AI+ 农业"：小农场开始有了大智慧

巴西家庭农场主要位于北部，大多数家庭农业从业者依靠牛耕、驴拉、人工生产，家庭农业机械化水平不高。农业生产数字化基础薄弱成为近 500 万巴西家庭农户生活改善的瓶颈。

2020 年前后，一些巴西家庭农场开始到中国寻找提升生产效率的良方。2024 年初，国机数字科技有限公司（简称"国机数科"）组建专业调研团队远赴巴西，深入各大农业产区与家庭农场，系统调研当地种植模式与基础设施条件，精准梳理出家庭农业转型的核心诉求，并搭建起政企校多方联动的常态化沟通对接机制。

当年 11 月，在中国教育部、巴西农村发展与家庭农业部等部门共同见证下，国机数科、中国农业大学、巴西利亚大学合作在巴西利亚、阿波迪设立的"中国—巴西家庭农业机械化联合研发与技术推广中心"（简称"科技小院"）正式揭牌。

中巴两国高校、企业科研人员依托"科技小院"，为巴西样本农场研发应用了"智慧农场管理平台"，通过田间装置的物联网感知设备，实时监测温度、湿度以及叶片上是否有害虫，智能农机在田间运行操作时也会实时感知土壤的各项指标，通过树立在田块周边的北斗

Almost instantly, the solenoid valves on the irrigation equipment in fields over several kilometers away switched on automatically, and water was then sprayed across the wheat field. This is just a snapshot of the daily routine at the smart agricultural program Science and Technology Courtyard jointly built by China and Brazil.

"AI + Agriculture": Small Farms Getting Smart

Brazil's family farms are concentrated mainly in the northern part, where the majority of family farmers still rely on oxen, donkeys and manual labor, resulting in a relatively low level of mechanization in family farming. The weak digital foundation of agricultural production has become a bottleneck for nearly 5 million Brazilian family farmers seeking to improve their livelihoods.

Around 2020, some Brazilian family farms began to come to China looking for solutions that could boost production efficiency. In early 2024, SINOMACH Digital Technology Corporation sent a specialized research team to Brazil. The team conducted in-depth surveys of local planting patterns and infrastructure conditions of major agricultural regions and family farms, pinpointing the core needs of family agriculture's transformation and establishing a standing communication and coordination mechanism linking government, business and academia.

基站进行数据传输，与装配在农场管理者手中的“智慧农场管理平台”进行交互，将耕种、田间管护、农事调度、粮食采收等全流程纳入智能化管控。农场管理者就像操作手机游戏一样，在手机或电脑界面上轻轻点击，即可完成田间的耕种管收。

“智慧小院”谱写农业可持续发展新篇章

两国科研人员依托“科技小院”，建设智慧农场管理模式。通过获取农田四情数据，为家庭农场构建适应当地的作物生长、病虫害防治、局部气象以及土壤分析的模型，生成定制化种植方案，实现农资、人工种植成本降低 8%—12%。全程管控作物生长周期，玉米、甘蔗等农作物长势明显改善，产量平均亩产提升 6%—10%。

以“科技小院”为核心，中巴农业合作逐步从单点技术示范延伸至全产业链协同。2025 年，中巴智慧农业合作进一步拓展，两国多家农机企业相继达成共建农机组装工厂、联合搭建区域性智慧农业综合服务中心等合作意向，一条集装备制造、跨境供应、数字化运维于一体的农业全产业链体系逐步成型。

“科技小院”支持下的全流程数字化过程管理，提升了农机作业精准度与利用率。埃德米尔森·泽维尔·达·科斯塔·菲略是阿彼迪

In November 2024, witnessed by China's Ministry of Education, Brazil's Ministry of Agrarian Development and Family Agriculture and other government bodies, the Brazil-China Center for Family Farming was officially inaugurated. The program was established by SINOMACH Digital Technology Corporation, China Agricultural University and the University of Brasília, with sites located in Brasília and Apodi.

Relying on the Science and Technology Courtyard, researchers from universities and enterprises in China and Brazil took the lead in developing and applying a smart farm management platform for sample farms in Brazil. Internet-of-Things sensors have been installed in the fields to monitor temperature, humidity and whether there are pests on the leaves in real time, while smart farm machinery can sense various soil indicators when it is operating in the fields. The data is transmitted via BeiDou base stations set up around the plots and fed into the Smart Farm Management Platform on farm managers' devices, bringing the entire process from planting, field management and work scheduling to harvesting under intelligent control. With a few light clicks on a phone or computer screen, farm managers can complete the planting, management and harvesting of the fields, just like playing a mobile game.

"Smart Courtyards" Boost Sustainable Agricultural Development

Researchers from China and Brazil have capitalized on the Science and Technology Courtyard to build a smart farm management mode. By collecting data on soil

位于巴西利亚的中国–巴西家庭农业机械化联合研发与技术推广中心
The Brazil-China Center for Family Farming in Brasília.

地区的水稻种植大户，全家 3 口人种植了 5 公顷水稻。阿波迪“科技小院”成立前，他家几乎全部依靠人畜力，仅播种前土地整备，全家上阵就要 4 天左右。如今，他用上了“科技小院”为他适配的数字化三角履带拖拉机带动旋耕机具，仅需一上午就能轻松搞定。

中国农业大学工学院研究生周辉回忆说：“我们曾接待过一位因为意外失去一只手臂的巴西农户，为他量身改制了收割机，他现在使用收割机，成了村里小有名气的‘中国机手’”。

巴西北里奥格兰德州立大学教授维尼修斯·克劳迪诺·德萨表示，“科技小院”正为巴西储备大批具备国际视野、能真正服务于家庭农场的本土技术人才。

如今巴西利亚占地 6000 多亩的 FAL 农场、3000 多亩的北大河州阿波迪农场，以及巴拉那州滕德里纳市 2000 多亩农田都已经建成智慧农场示范区。相关数据显示，在巴西玉米规模化种植场景中，使用中国团队提供的技术设备解决方案可使玉米生产效率提升近 2 倍。

这一农业智能化合作范式不仅在巴西迅速发展，还推广到了泰国、白俄罗斯等国。它以合作为纽带，让人工智能技术惠及更多国家，为全球减贫事业、粮食安全与可持续发展持续赋能。（邵莉）

moisture, crop growth, pests and diseases, and disaster conditions, they have built models tailored to local conditions for crop growth, pest and disease control, as well as local weather and soil analysis, generating customized planting plans for family farms and cutting the cost of farm inputs and labor by 8% to 12%. With the entire crop growth cycle under management, crops such as corn and sugarcane have shown markedly better growth, raising the average yield per mu by 6% to 10%.

With the Science and Technology Courtyard at its core, agricultural cooperation between China and Brazil has gradually expanded from single-point technology demonstrations to collaboration across the entire industry chain. In 2025, smart agriculture cooperation between the two countries expanded further, with several agricultural machinery companies from both sides reaching agreements of intent to jointly build machinery assembly plants and set up regional, integrated smart agriculture service centers, among other projects. A full agricultural industry chain combining equipment manufacturing, cross-border supply, and digital operation and maintenance is gradually taking shape.

The full-process digital management supported by the Science and Technology Courtyard program has seen improvement in the precision and utilization rate of farm machinery operations. Edmilson Xavier da Costa Filho, a major rice grower in Apodi, farms 5 hectares of rice with his family of three. Before the Science and Technology Courtyard was established in Apodi, his family relied almost entirely on

animal and human labor. Just preparing the land before sowing took the whole family about four days of work. Now, using a digitally controlled rotary tiller driven by a tractor with triangular crawler tracks tailored for him by the Science and Technology Courtyard, he can get the job done in a single morning.

Zhou Hui, a graduate student from the College of Engineering at China Agricultural University, recalled: "We once worked with a Brazilian farmer who had lost an arm in an accident, and customized a harvester for him. Now he operates it more skillfully and becomes something of a celebrity in the village, known as the 'Chinese machine operator'".

Vinicius Claudino de Sá, a professor at the State University of Rio Grande do Norte in Brazil, said the Science and Technology Courtyard is helping Brazil build up a pool of homegrown technical talents with global vision who can genuinely serve family farms.

Today, smart farm demonstration zones have been established on the FAL farm (over 400 hectares) in Brasília, the Apodi farm (over 200 hectares) in Rio Grande do Norte state, and more than 130 hectares of farmland in the city of Londrina in Paraná state. Data showed that in large-scale corn farming in Brazil, the technology and equipment solutions provided by the Chinese team could boost corn production efficiency by nearly 200%.

This paradigm of cooperation on smart agriculture is not only developing rapidly in Brazil but also spreading to other countries such as Thailand and Belarus. With cooperation as the bond, it is bringing the benefits of AI technology to more countries, consistently empowering the global cause of poverty alleviation, food security and sustainable development. (Shao Li)

自动驾驶技术铺就阿联酋智慧出行路

Autonomous Driving Technology Paves Way for Smart Mobility in the UAE

乘客正在乘坐无人驾驶车
A passenger is riding in an autonomous vehicle.

烈日朗照下的阿拉伯半岛，现代化都市路网纵横交错。川流不息的城市道路上，一辆自动驾驶车辆自如穿梭行进，精准避让行人、有序变道通行，灵活行驶于车流中，全程无人工操控。这并不是科幻电影中的场景，而是当下阿联酋城市交通的真实一幕。

这一实景的背后，是中国自主研发的 L4 级自动驾驶技术跨越山海落地阿拉伯半岛，为这里的居民带来智慧出行体验。

“AI+ 出行”：赋能阿联酋自动驾驶

这场跨国合作，源于两国技术优势与转型需求的双向奔赴。阿联酋一直走在数字化转型的前沿，将科技创新、智能交通列为核心发展方向，而自动驾驶正是其打造未来城市、改善民生服务的关键。

2021 年，阿布扎比综合交通中心启动全城自动驾驶试点计划，面向全球遴选成熟可靠的技术方案。同年，广州文远知行科技有限公司的 L4 级自动驾驶全栈技术精准匹配当地的核心需求，成为首批入驻阿联酋开展落地实践的中国自动驾驶企业。

当中国团队带着技术、经验与标准扎根阿联酋，这份满满的诚意与

Under the scorching sun of the Arabian Peninsula, a web of modern urban roads stretches in every direction. Along busy city streets, an autonomous driving vehicle weaves through traffic with ease. It operates entirely on its own, precisely avoids pedestrians, changes lanes in an orderly fashion, and navigates nimbly through the flow of cars. This is not a scene from a science fiction film, but a real scene of urban transportation in today's United Arab Emirates (UAE).

Behind this scene lies a remarkable journey: China's homegrown Level 4 autonomous driving technology has traveled across mountains and seas to take root in the Arabian Peninsula, bringing residents here an experience of smart mobility.

"AI + Mobility": Empowering Autonomous Driving in the UAE

This cross-border cooperation perfectly demonstrates the two countries' complementarity, as China's technological strengths amply meet the UAE's needs for transformation. The UAE has long stood at the forefront of digital transformation and placed technological innovation and smart transportation among its core development priorities, with autonomous driving serving as a key to building cities of the future and improving public services.

In 2021, Abu Dhabi's Integrated Transport Centre launched a city-wide autonomous

中方工程师与当地安全监督员在车内共同进行产品技术调试（温宿年 摄）

A Chinese engineer and a local safety supervisor carry out technological testing together inside a car. (Photo provided by Wen Xiuxian)

过硬的技术实力换来了沉甸甸的认可：2023 年 7 月，阿联酋政府为该企业颁发中东首个国家级全域、全车型自动驾驶路测牌照，许可其在阿联酋所有酋长国公共道路开展测试与运营；2025 年 10 月，阿联酋为该企业发放了城市级 L4 纯无人商业化牌照，这意味着车内不再需要安全员，真正实现了无人自动驾驶。

“扩大自动驾驶车辆 Robotaxi 的运营范围，是阿布扎比打造更智能、更安全出行系统的重要一步。”阿布扎比综合交通中心代理总干事 Dr Abdulla Hamad AlGhfeli 说：“我们正在努力将 Robotaxi 部署至阿尔雷姆岛和阿尔马里亚岛等人口聚居区，为居民提供更安全、高效的出行体验。”

技术迭代 破解特殊环境下自动驾驶难题

中国自动驾驶技术在阿联酋前行的每一步，都浸透着团队日复一日的汗水与坚持，极端环境就是他们面临的挑战之一。每年 4 至 10 月，当地气温常突破 40℃，地表最高温度接近 70℃，常规车载传感器与计算平台容易因高温失灵，频繁的沙尘天气也会遮蔽感知设备，影响定位与识别精度。此外，当地独特的交通出行习惯、道路标识体系与中国差异较大，AI 算法一度面临“水土不服”。

driving pilot program, seeking mature and reliable technological solutions from around the globe. In the same year, the full-stack Level 4 autonomous driving technology developed by Guangzhou-based autonomous driving company WeRide proved a precise match for the region's core needs, making it one of the first Chinese autonomous driving companies to put its technology into practice in the UAE.

The Chinese team started operations in the UAE with its technology, experience, standards, utmost sincerity and solid technological strength, helping it earn profound recognition. In July 2023, the UAE government granted the Chinese company the Middle East's first national license for autonomous driving road operation covering all areas and all vehicle types, permitting it to test and operate on public roads across all of the UAE's emirates. In October 2025, the UAE awarded the company the city-level Level 4 fully driverless commercial license, meaning that a safety attendant was no longer needed inside the vehicle and that its vehicles truly realized driverless autonomous operation.

"Expanding the operating area of Robotaxi service marks an important milestone in Abu Dhabi's journey toward realizing its vision for a smarter and safer mobility system," said Abdulla Hamad AlGhfeli, acting director general of the Integrated Transport Centre. "We are working to extend the deployment of autonomous driving vehicles to high-density areas such as Al Reem and Al Maryah islands, in order to provide a safer and more efficient travel experience."

Iterative Technology Breakthroughs for Autonomous Driving in Complex Environments

Every step forward for Chinese autonomous driving technology in the UAE has been steeped in the team's sweat and perseverance day after day, and the extreme environment was one of the challenges they faced. From April to October each year, local temperatures frequently exceed 40 degrees Celsius, with surface temperatures approaching 70 degrees Celsius. Under such conditions, ordinary onboard sensors and computing platforms can fail to work. Frequent sandstorms can also obscure sensor perception, affecting positioning and recognition accuracy. On top of this, local traffic and travel habits and the road-sign system differ from those in China, and the AI algorithms had once struggled to adapt to the unfamiliar conditions.

为破解一系列难题，中方团队一头扎进烈日当中，与当地技术人员并肩作战，打造专属解决方案，不仅解决了车辆无法在高温环境下持续稳定运行的难题，还实现了沙尘天气下厘米级的精准定位，更历经数千次的实地测试适配当地交通规则与出行习惯，最终实现自动驾驶技术与沙漠城市场景的深度契合。

在打磨技术的同时，中方团队还作为阿布扎比智能与自动系统委员会（SASC）基础设施、法规与试点加速工作组成员，全程参与当地自动驾驶道路设施、安全规范、运营监管等关键标准的制定与完善，助力当地智能交通体系规范化、可持续发展。

嵌入优步 实现无人驾驶出租车商业化运营

技术的研发迭代终将变为温暖的出行体验。2024 年 12 月，Robotaxi 正式接入优步平台；2025 年 11 月，Robotaxi 在阿布扎比开启纯无人商业化运营，让当地民众率先体验 AI 技术带来的出行变革；2026 年 3 月，项目团队在迪拜推出了纯无人 Robotaxi 商业化服务。

To address these challenges, the Chinese team plunged headlong into the blazing sun, working shoulder to shoulder with local technologists to build tailored solutions. They not only solved the problem of vehicles being unable to run stably and continuously in high-temperature conditions, but also achieved centimeter-

优步中东地区自动驾驶出行负责人 Mohamad Jardaneh 表示：“自 Robotaxi 服务启动以来，我们已见证阿布扎比乘客的积极反响。如今，我们希望让更多市民能接触到自动驾驶出行。”

常态化运营以来，自动驾驶车队的服务填补了节假日出行的运力缺口，有效弥补了城市交通运力短板，大幅提升市民与游客出行的便捷性与高效性，成为城市公共交通体系的重要补充。

一位当地居民乘坐 Robotaxi 出行后感慨道：“一开始我有点害怕，但这辆车的性能非常好，让我感到很安全。而且每次叫车都很方便，只需要在应用中设定好起点、终点，非常轻松。”

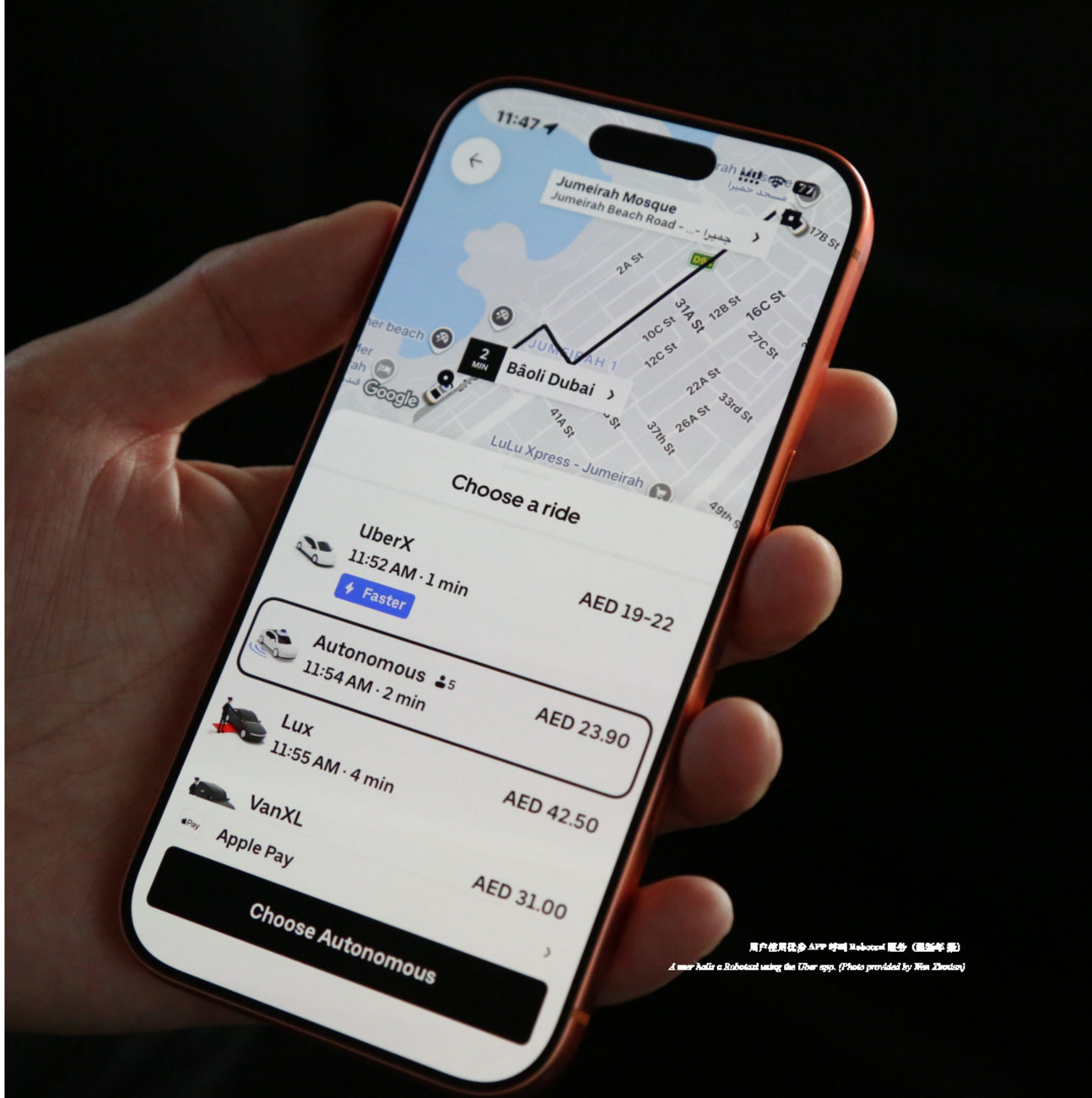
如今在阿布扎比与迪拜街头，人们真切感受到了 AI 技术为生活带来的改变：对当地民众而言，自动驾驶出租车带来了更便捷、高效的出行选择，而外国游客亦无需担忧语言与路线问题，一键约车即可便捷奔赴各大景点。同时，智能算法优化行驶轨迹，大幅减少能源消耗与尾气排放，为低碳发展增添助力。未来，随着更多应用场景的落地，中国自动驾驶技术将与更多国家携手同行，共同绘就全球智慧交通的崭新图景。（张晓曦）

level positioning accuracy in sandstorms. Through thousands of field tests, they adapted the vehicles to local traffic rules and travel habits, ultimately integrating the autonomous driving technology seamlessly with desert urban scenarios.

While refining the technology, the Chinese team also served as a member of the infrastructure, regulations and pilot acceleration working group under Abu Dhabi's Smart and Autonomous Systems Council, taking full part in the formulation and refinement of key standards for local autonomous-driving road infrastructure, safety norms and operational oversight, and helping advance the standardized and sustainable development of the city's smart transportation system.

Integrating with Uber to Achieve Commercial Deployment of Robotaxi Services

Technological R&D and iteration have ultimately transformed into a pleasant travel experience. In December 2024, Robotaxi was formally integrated into the Uber platform. In November 2025, the commercial operation of fully driverless Robotaxi service was launched in Abu Dhabi, enabling local residents to experience the mobility revolution brought by AI technology. In March 2026, the project team rolled out its fully driverless Robotaxi commercial service in Dubai.



用户使用优步 APP 呼叫 Robotaxi 服务（图源本报）

A user hails a Robotaxi using the Uber app. (Photo provided by Wen Huaxiao)

2026 年 6 月，乘客乘坐自动驾驶车辆 Robotaxi 出行（温炳年 摄）

In June 2026, a passenger rides in an autonomous driving vehicle Robotaxi. (Photo provided by Wen Xianian)

Mohamad Jardaneh, in charge of Uber's autonomous driving mobility business in the Middle East, said: "We've seen some great engagement from riders in Abu Dhabi since the launch of the Robotaxi service. Now, we hope to make autonomous mobility accessible to even more residents."

Since regular operations began, the autonomous driving fleet's services have filled gaps in transport capacity during holidays, effectively making up for shortfalls in urban transit capacity. They have greatly enhanced the convenience and efficiency of travel for both residents and visitors, becoming an important complement to the city's public transportation system.

After taking a ride in a Robotaxi, a local resident said: "At first I was a little scared, but the car performs so well that it makes me feel very safe. Hailing a ride is convenient every time, as I just need to set the starting point and destination in the app. It's so easy."

Today, on the streets of Abu Dhabi and Dubai, people are truly feeling the changes that AI technology has brought to their lives. For local residents, autonomous driving taxis offer a more convenient and efficient travel option, while foreign tourists do not need to worry about language or routes as a single tap is all it takes to reach the city's major attractions. At the same time, intelligent algorithms optimize driving routes, sharply reducing energy consumption and exhaust emissions and thereby contributing to low-carbon development. In the future, as more application scenarios take shape, China's autonomous driving solutions will deepen partnerships with more nations to jointly unfold a brand-new landscape of global smart mobility. (Zhang Luxi)

AI 为印尼电信编织低碳新网

AI Weaves a Low-Carbon Network for Indonesia's Telecom Sector

印尼城区规模化 5G 基站集群现场

A large-scale 5G base station cluster in an urban area of Indonesia.

双方达成战略合作，启动节能项目

ZTE and XLSMART strike a strategic partnership and launch an energy-saving project.

凌晨四点半，印度尼西亚泗水晨光熹微。24 小时营业的便民小店内，店主莉娜·萨丽正低头翻看手机上的线上订单。“这个时间网络一定不能卡，很多客人一早就下单，如果支付失败，一天的生意都会受影响。”莉娜感慨道。

与此同时，数公里外的 XLSMART 雅加达网络运营中心，拥有十五年通信运维经验的工程师 Oka Handiman 坐在操作台前，注视着 AI 模型自动刷新出的全网节能状态。这幅绿色智能的日常图景，正是 HI-RAN 智能节能项目落地印尼后，当地通信产业蜕变而来的鲜活实景。

跨海结缘：从“粗放节能”到“智能节能”

XLSMART 作为印尼主流电信运营商之一，基站网络铺遍海岛城乡。

At 4:30 a.m., the first faint light of dawn barely touched Surabaya, Indonesia. Inside her round-the-clock convenience store, owner Lina Sari looked down at her phone to check the online orders. "The internet absolutely cannot lag at a time like this. A lot of customers place orders very early in the morning. If a payment fails, it can affect the whole day's business," Sari said.

A few kilometers away, inside XLSMART's Jakarta network operations center, Oka Handiman, an engineer with 15 years of experience in telecom operations and maintenance, sat at his console and watched the energy-saving status of the entire network automatically refreshed by an AI model. This everyday scene is a vivid snapshot of how Indonesia's telecom industry has been transformed since ZTE Corporation's HI-RAN (Hybrid-Intelligent Radio Access Network) intelligent energy-saving solution took root in the country.

随着印尼数字经济蓬勃崛起，沿用多年的人工粗放运维模式逐渐成为发展桎梏。“真正难的不是节能，而是既节能，又不影响用户体验。”XLSMART 项目负责人 Gaurav Goyal 坦言，“我们急需一套智能节能方案，在网络质量、运营成本与绿色低碳之间找到平衡点。”

2025 年，XLSMART 启动新一轮网络智能化升级计划。彼时，中兴通讯已经积累了大规模智能节能规模商用经验。依托 HI-RAN 网络自智能力，双方决定在印尼联合推进智能节能项目，通过更加精细化的动态调度能力，提升网络节能效率。

千岛攻坚：让系统“读懂”印尼网络

项目启动后，中国—印尼联合团队很快发现，本土网络环境的复杂程度远超预期。群岛地貌带来的覆盖差异、多频段混合组网、不同代际设备并存，以及沿海高温高湿环境，都对系统适配提出了更高要求。项目现场负责人赵启勇回忆：“没有任何一套参数模板可以直接照搬，每个场景都要让 AI 模型重新学习。”

Forging Partnership: From Extensive Energy Saving to Intelligent Energy Conservation

As one of the country's leading telecom operators, XLSMART has built a base station network across the archipelago, spanning urban and rural areas. Yet as Indonesia's digital economy surged, the longstanding model of manual, unrefined telecom operations and maintenance gradually became a bottleneck to development. "The real challenge isn't just cutting energy consumption; it's doing so without compromising user experience," said XLSMART project leader Gaurav Goyal. "We urgently needed an intelligent energy-saving solution that could strike a balance among network quality, operating costs and low-carbon goals."

In 2025, XLSMART launched a fresh round of intelligent network upgrade initiatives. By then, ZTE had already accumulated extensive commercial experience from deploying large-scale intelligent energy-saving models. Leveraging HI-RAN's built-in intelligent capabilities, the two parties decided to jointly advance an intelligent energy-saving project in Indonesia, using more refined dynamic dispatch capabilities to realize greater network energy efficiency.

双方技术团队完成阶段性部署后开展成果复盘与技术总结交流

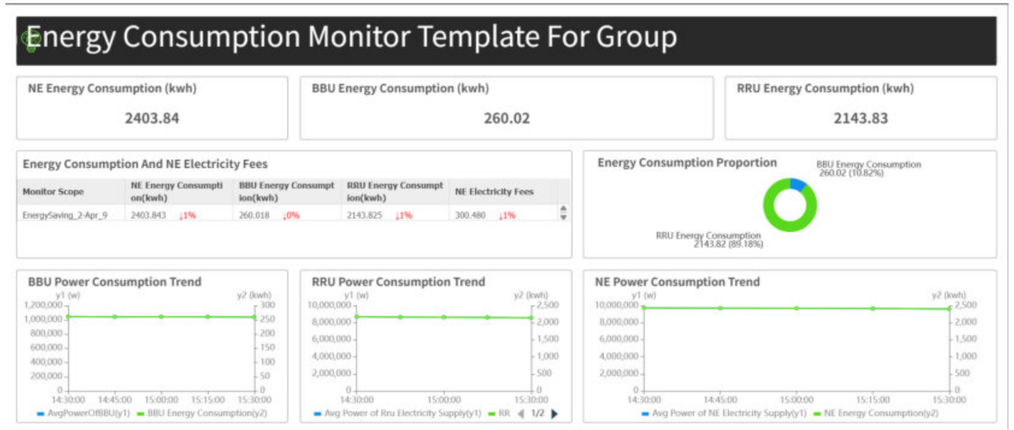
The technical teams conduct a review and knowledge-sharing session following the completion of a phase of deployment.

随后，联合技术团队开始了长达数月的本地化训练与验证。工程师们深入爪哇岛城区、加里曼丹工业区、苏门答腊沿海站点以及大量乡村区域，持续采集真实网络运行数据。白天，团队穿梭于各类基站之间核查网络负载情况；夜晚，则在运维中心迭代 AI 算法、调试系统参数。

经过海量数据学习后，AI 模型开始逐渐“读懂”印尼网络。它能够识别不同区域的业务变化趋势，预测网络负载变化，并基于实时 KPI 动态调整节能门限。每天夜间，当部分区域流量开始下降后，AI 模型会结合历史数据、实时负载与网络 KPI，动态判断不同站点进入节能状态的最佳时机；而在清晨，当部分区域流量重新回升时，AI 模型又会提前恢复网络容量，确保稳定的用户体验。

Tackling Challenges: Teaching the System to Understand Indonesia's Network

After the launch of the project, the joint China-Indonesia team quickly discovered that the complexity of the local network environment far exceeded expectations. Archipelago geography meant wildly uneven coverage, the network combined multiple frequency bands, equipment from multiple generations coexisted, and the coastal environment featured scorching heat and high humidity. All of these placed stricter requirements on system adaptation. "There was no single parameter template we could just copy and paste, and the AI model had to learn about every scenario from scratch," recalled on-site project leader Zhao Qiyong.



项目智能运维平台实时展示基站运行状态、流量数据与节能调控效果

The project's smart operations platform displays real-time base station status, traffic data and energy-saving control outcomes.

绿色转型：超 1.8 万个站点完成智能化升级

经过多轮试点与持续优化后，搭载自研 AI 模型的 HI-RAN 智能节能方案开始在 XLSMART 现网规模化部署。截至目前，项目已完成超过 1.8 万个站点智能化升级，覆盖 XLSMART 约 80% 现网中兴通讯基站。

整套 AI 系统实现全自动闭环运行，在网络质量保持稳定的前提下，改造站点平均节能率达到 10.9%。按照全网超 2 万个站点测算，项目每年预计可节约电力 5400 万千瓦时，减少二氧化碳排放超过 4 万吨，减排体量相当于一座小型城市的年度居民用电碳排放总量，有效助力印尼降低数字基础设施运营成本以及绿色低碳转型。

Oka 所在的运维团队，也切身感受到了变化。“以前我们更多是在

What followed were months of localized training and verification by the joint team. Engineers traveled to urban areas of Java, the industrial zone in Kalimantan, coastal sites in Sumatra, and countless rural areas, continuously collecting real-world network operating data. By day, the team shuttled among base stations checking network load conditions; by night, they stayed in the operations center iterating AI algorithms and fine-tuning system parameters.

After training on massive amounts of data, the AI model gradually began to understand Indonesia's network. It learned to identify traffic trend patterns across different regions, predict shifts in network load, and dynamically adjust energy-saving thresholds based on real-time KPI. Each night, as traffic drops in certain areas, the model draws on historical data, real-time load and network KPI figures to dynamically determine the optimal moment for each site to enter energy-saving mode. In the early morning hours, when traffic climbs again in some areas, the

不断修改规则，现在系统已经能自己适应很多变化。”Oka 说，“网络开始变得越来越‘聪明’了。”

深耕共建：中国绿色通信技术扎根印尼

如今，双方工程师正在雅加达围绕 5G-A 迭代、AI 算力应用、绿色网络升级等开展联合研发，以便进一步挖掘 AI 在频谱优化、体验升级、新型场景赋能等领域的潜力。越来越多印尼本地技术人员开始参与模型训练、网络数据分析与智能运维体系建设，中国智能网络技术也逐渐融入印尼数字基础设施发展进程。

从凌晨重新升起的网络流量，到万岛之间依靠 AI 算法实时动态调节功耗的通信基站，中国智能网络技术正跨越山海，在印尼落地生根。这场绿色数字合作，不只是一次通信节能项目的实践，更是中国 AI 网络技术、绿色标准、创新运维模式走向海外的重要一步。当越来越多国家开始同时面对数字化增长与低碳转型双重挑战时，中国通信产业正在用更加成熟的智能化能力，为全球绿色数字基建提供新的实践路径。（胡梦婷）

AI model restores network capacity ahead of the surge to ensure smooth user experience.

Green Transformation: Intelligent Upgrades of over 18,000 Sites

After multiple rounds of pilot testing and continuous refinement, the HI-RAN intelligent energy-saving solution powered by self-developed AI began large-scale commercial deployment across XLSMART's network. To date, the project has completed intelligent upgrades at more than 18,000 sites, covering around 80% of XLSMART's existing ZTE-supplied base stations.

The AI-powered system operates in a completely automatic closed loop. With network quality held steady, upgraded sites have achieved an average energy-saving rate of 10.9%. Based on projections across the more than 20,000 sites in the network, the project is expected to save approximately 54 million kilowatt-hours of electricity annually and reduce carbon dioxide emissions by over 40,000 tonnes, a carbon reduction equivalent to the annual emissions from household power consumption of a small city. The project has effectively helped Indonesia reduce

the operational costs of digital infrastructure and advance its green and low-carbon transformation.

Handiman and his operations team have felt the difference firsthand. "In the past, our work was largely about constantly rewriting rules. Now the system can adapt to a lot of changes on its own," Handiman said. "The network is getting smarter and smarter."

Joint Construction: China's Green Telecom Technologies Taking Root in Indonesia

Today, Chinese and Indonesian engineers are conducting joint R&D in Jakarta in areas such as 5G-Advanced iteration, AI computing power deployment and green network upgrades to further unlock the potential of AI in spectrum optimization, user experience enhancement and empowering emerging service scenarios. A growing number of Indonesian technicians are now actively participating in model training, network data analysis, and the development of intelligent operations and maintenance systems. China's intelligent network technology has been gradually woven into the fabric of Indonesia's digital infrastructure.

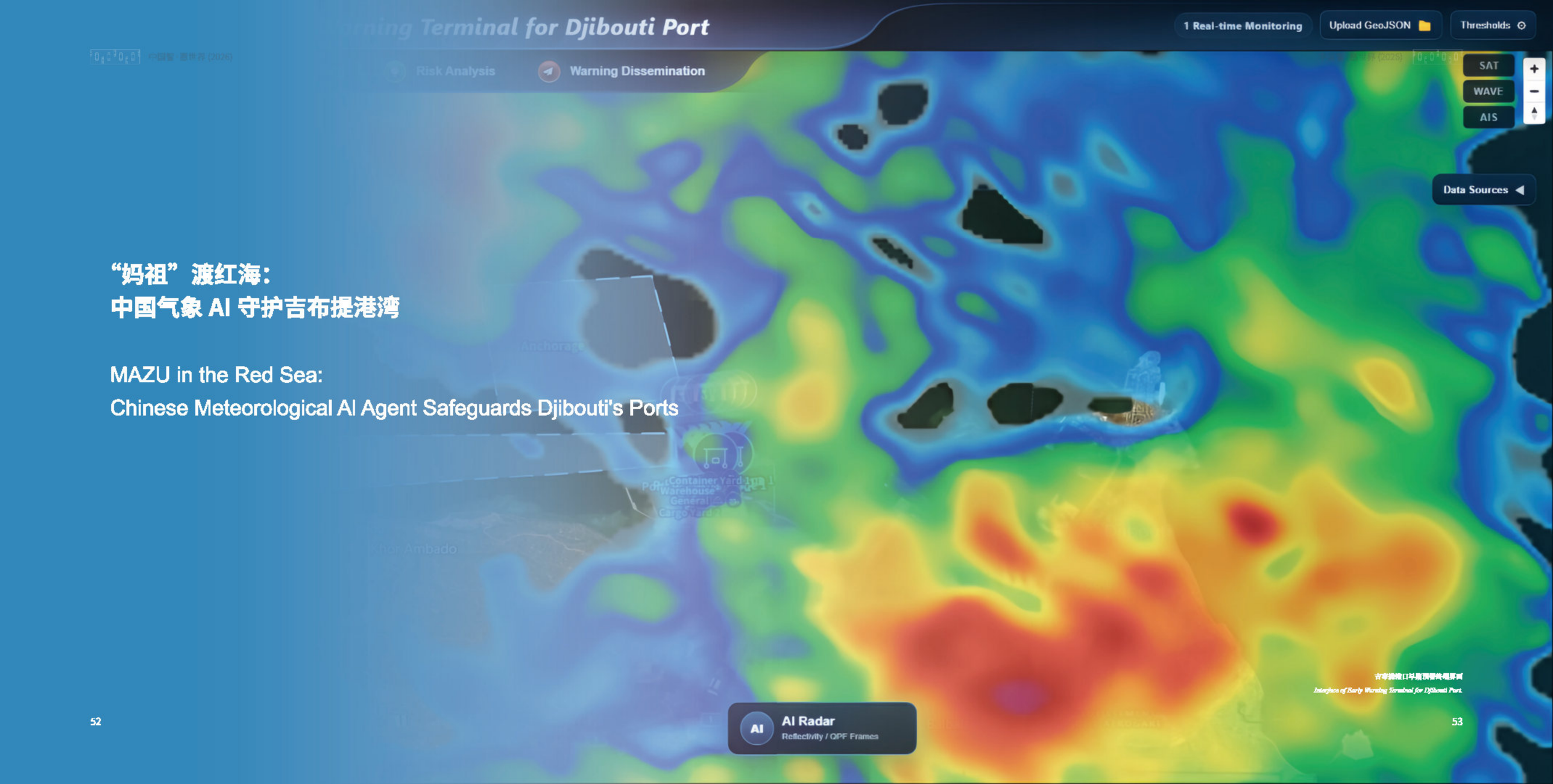
From the resurgent morning network traffic in Surabaya to the base stations across the Indonesian archipelago whose power consumption is adjusted in real time using AI algorithms, China's intelligent network technology has crossed mountains and oceans to put down roots in Indonesia. This green digital collaboration is more than a single telecom energy-saving project; it marks a meaningful step toward bringing China's AI network technology, green standards and innovative operations models onto the world stage. As more countries face the dual pressures of digital growth and low-carbon transformation, China's telecom industry is offering the world a new practical path forward for building green digital infrastructure. (Hu Mengting)

技术人员正在进行基站检测

A technician is conducting base station inspection.

“妈祖”渡红海：
中国气象 AI 守护吉布提港湾

MAZU in the Red Sea:
Chinese Meteorological AI Agent Safeguards Djibouti's Ports



吉布提港口早期预警终端界面

Interface of Early Warning Terminal for Djibouti Port.

在非洲之角的吉布提多哈雷多功能港码头上，装卸工人穆罕默德·阿里曾经日复一日地与不确定性搏斗——高温、突发性强风、短时暴雨说来就来。极端天气突袭导致停工、设备损毁、人员中暑。如果能精准预判灾害，就能提前部署防范。

2025 年，响应吉布提防灾减灾需求，中国气象局发布的全民早期预警中国方案“妈祖（MAZU）”在吉落地应用。自此，中国 AI 气象技术扎根非洲之角，补上了吉布提防灾减灾短板，筑起一道智能安全屏障。

缘结红海：从防灾痛点到中吉 AI 合作契机

吉布提扼守红海通往印度洋的关键航道，多哈雷多功能港的港口装卸、远洋船舶调度，无一不依赖气象预警。2025 年 7 月发布的全民早期预警中国方案“妈祖（MAZU）”受到广泛关注。这一方案以人工智能为核心技术，深度融合先进算法与多源数据，搭载云端早期预警系统产品、气象开源模型等。吉布提气象部门第一时间向中方提出合作请求，希望引进适配本土的城市级 AI 预警系统。上海市气象局基于城市多灾种预警中心示范项目的基础承接该项目，由此开启中吉 AI 防灾减灾合作之路。

In Djibouti, on the Horn of Africa, dockworker Mohamed Ali used to grapple with uncertainty day after day at the Doraleh Multi-Purpose Port — blistering heat, sudden gales and short bursts of torrential rain could strike without warning. Extreme weather events have caused shutdowns, equipment failures, and heatstroke cases. If such disasters could be accurately forecasted, preventive actions could be taken ahead of time.

In 2025, tailored to Djibouti's needs in disaster prevention and mitigation, MAZU, China's solution to the United Nations' Early Warnings for All campaign, released by the China Meteorological Administration (CMA), was put into use in the country. Since then, Chinese AI-based meteorological technology has taken root in the Horn of Africa, bridging the capability gaps in Djibouti's disaster prevention capabilities and building an intelligent safety shield for the country.

AI Collaboration Addressing Djibouti's Pain Points in Disaster Prevention

Djibouti commands a strategic waterway linking the Red Sea to the Indian Ocean, and the Doraleh Multi-Purpose Port needs weather warnings for everything from cargo handling to the scheduling of ocean-going vessels.

城市多灾种早期预警智能体吉布提版启用仪式现场
MAZU-Urban is formally put into operation in Djibouti.

项目筹备阶段，中方技术团队先后开展多轮线上调研、实地勘探，摸清了吉布提城市、港口与机场的防灾核心诉求：补齐城市高温、大风精细化风险评估能力短板；定制港口专属气象预警模块，解决港区突发灾害预警滞后难题；协助吉方整编数据集，夯实本地化 AI 训练的数据基础。

2025 年 12 月 18 日，上海市气象局与吉布提气象局正式签署项目交接证书，“妈祖（MAZU）”多灾种早期预警城市场景应用智能体（简称“智能体”）在吉布提落地启用。

AI 守港湾：码头工人告别极端天气突袭

智能体落地后，当地码头工人依赖天气情况研运气的作业模式发生了根本改变。系统依托风云卫星遥感数据、国际交换观测数据、风清 AI 预报模型，参照中国城市气象灾害分级标准，为吉布提量身定制了本土化的高温、大风阈值，搭建起专属的“港口气象服务系统”与“城市预警智能看板”。如今，极端天气可提前 24 小时分级预警，预警信息通过短信和系统看板双渠道直达港口管理方与一线班组。

“这是我们一直期待的技术支持。”吉布提气象局技术人员说，“智能体不仅界面友好，预警响应速度也明显提升，尤其在高温、暴雨等极端天气追踪方面，给我们提供了前所未有的预报参考。”

目前，针对吉方反馈的需求，中方团队已启动系统专项升级，定制研发的“吉布提专属告警看板”模块进入落地开发阶段。

放眼未来：从单点落地到全域普惠的“气象桥梁”

依托“妈祖（MAZU）”体系标准，吉布提在后续自主建设气象监

MAZU, China's early warning solution for all, launched in July 2025, has drawn widespread attention. It takes AI as its core technology, deeply integrates advanced algorithms with multi-source data, and is equipped with cloud-based early warning capabilities, open-source meteorological models and more. Djibouti's meteorological authorities wasted no time in proposing cooperation with China, hoping to introduce a city-level AI warning system adapted to local conditions. The Shanghai Meteorological Service (SMS) took on the project on the basis of its Urban Multi-Hazard Early Warning Center demonstration project, thus embarking on a path of cooperation on AI-powered disaster prevention and mitigation between China and Djibouti.

During the preparatory phase, the Chinese technical team conducted several rounds of online research and on-site surveys, identifying the core disaster-prevention needs of Djibouti's cities, ports and airports: closing the gap in fine-grained risk assessment for urban heat and strong winds, customizing a dedicated meteorological warning module for ports to solve the problem of delayed warnings for sudden hazards, and helping the Djiboutian side compile its datasets to lay a solid data foundation for localized AI training.

On December 18, 2025, SMS and Djibouti's National Meteorological Agency (ANM) officially signed the project handover certificate, marking the launch of the MAZU-Urban AI Agent for Urban Multi-Hazard Early Warning in Djibouti.

With the Power of AI, Dockworkers No Longer Fear Extreme Weather

Since the AI agent went live, local dockworkers no longer have to rely on luck when it comes to weather conditions, as their operating model has undergone a fundamental transformation. Drawing on remote-sensing data from China's Fengyun meteorological satellites, internationally exchanged observation data and the Fengqing AI forecasting model, and referring to China's grading standards for urban meteorological hazards, the AI agent set localized thresholds for high heat and

中方技术团队在多哈雷多功能港与港管负责人交流

Members of the Chinese technical team talk with an operations manager at the Doraleh Multi-Purpose Port.

测项目时，主动将中方技术规范纳入参考依据，推动从设备使用到标准共建深度合作。

立足现有落地成果，中吉双方敲定三期合作规划：短期完成港口服务系统、预警看板定制功能的上线落地；中期落地吉布提气象监测预警智能终端布设项目，持续扩充本地观测数据源；长期则把城市防灾 AI 能力向吉布提内陆城镇延伸，助力吉布提全域构建分级早期预警网络。

中吉合作样板持续释放示范效应。“妈祖（MAZU）”自发布以来，已在巴基斯坦、埃塞俄比亚、所罗门群岛等国落地，将中国防灾减灾经验转化为全球公共产品。

作为中国响应联合国全民早期预警倡议、践行全球可持续发展目标的标志性成果，“妈祖（MAZU）”以务实合作搭建起 AI 赋能全球防灾减灾的新型“气象桥梁”，将持续为非洲之角乃至全球更多国家和地区带去普惠的气象服务。（高少华）

strong winds tailored to Djibouti, and built a dedicated "port meteorological service system" and an "urban early warning smart dashboard." Extreme weather can now be flagged with graded warnings up to 24 hours in advance, with alerts reaching port management and frontline crews through both text messages and the dashboard.

"This is the kind of technological support we've long been hoping for," said a technician at Djibouti's ANM. "The AI agent is not just user-friendly; it has also markedly sped up our response to warnings. It has given us forecasting references we never had before, especially in tracking extreme weather incidents such as heat waves and heavy rain."

At present, in response to the needs raised by the Djiboutian side, the Chinese team quickly launched a dedicated upgrade of the system and developed a special alert dashboard exclusively for Djibouti. This module is now in the implementation and development stage.

From a Single Site to a "Meteorological Bridge" Benefiting the Whole Country

Relying on the standards of the MAZU system, Djibouti has proactively incorporated

Chinese technological specifications as a reference for its future meteorological monitoring projects, advancing cooperation from the use of equipment to the joint development of standards.

Building on what has already been achieved, China and Djibouti have mapped out a three-phase cooperation plan. In the short term, the port service system and the customized features of the warning dashboard will be put into operation. In the medium term, a project to deploy smart meteorological monitoring and warning terminals will be implemented across Djibouti to continuously expand local sources of observation data. In the long term, AI-based urban disaster prevention capabilities will be extended to Djibouti's inland towns, helping the country build a nationwide, tiered early warning network.

The China-Djibouti cooperation model has continuously delivered its demonstration effect. Since its launch, MAZU has been put into operation in countries including Pakistan, Ethiopia and the Solomon Islands, turning China's experience in disaster prevention and mitigation into a global public good.

As a signature achievement of China's response to the United Nations' Early Warnings for All initiative and its efforts to advance the Sustainable Development Goals, MAZU has built a new kind of AI-powered "meteorological bridge" for global disaster prevention and mitigation through practical cooperation. MAZU will continue to bring inclusive meteorological services to the Horn of Africa and to more countries and regions around the world. (Gao Shaohua)

小模型 AI 算法
助推马来西亚橡胶产业创新破局

Small-Model AI Algorithms
Help Malaysia's Rubber Industry Break New Ground

天能橡胶智能化加工解决方案在马来西亚企业落地应用

An intelligent natural rubber processing solution is deployed at a Malaysian enterprise.

在马来西亚最大天然橡胶加工企业的半自动化车间，传统生产模式曾用工量较大。如今，广东若铂智能机器人有限公司（简称“广东若铂”）凭借自研的小模型 AI 算法与高精度伺服驱动控制系统，为橡胶企业定制智能工厂，在马来西亚悄然掀起一场农业与工业领域的“智造”变革。

“理科生”AI：攻克异形胶块搬运难题

天然橡胶，是制造轮胎、医疗导管乃至航空航天器件不可或缺的原料。然而，橡胶产业的部分加工环节长期依赖密集的手工劳动。在马来西亚，橡胶行业面临劳动力成本不断增加的情况。

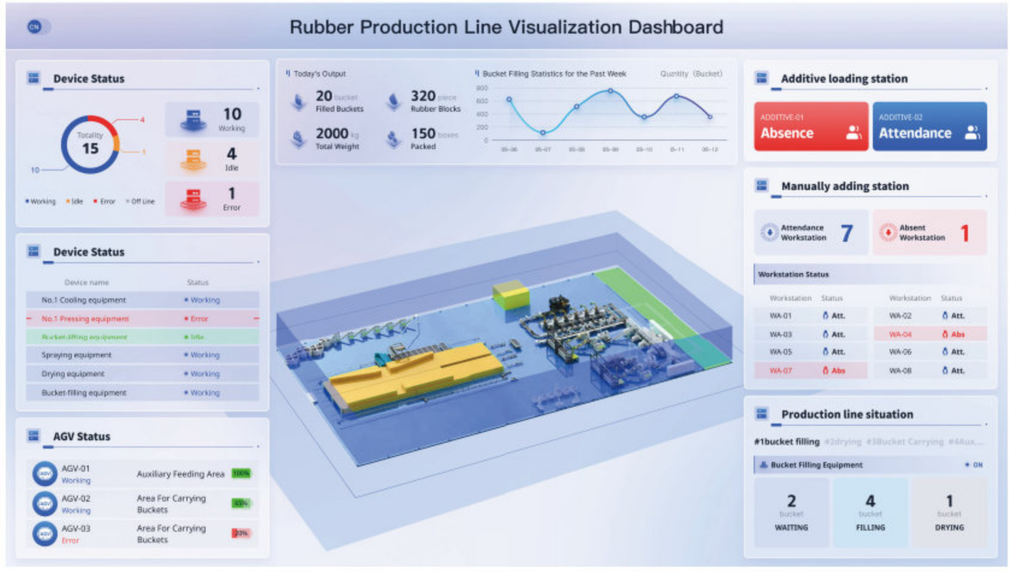
橡胶年产量约 20 万吨、占马来西亚全国出口量 20% 以上的天然橡胶加工企业盛丰控股也深受困扰。“过去，我们后半部分生产线——从烘干炉出来一直到生产包装——基本全用人工。”该公司董事长余福来说，“在找到广东若铂并经深入探讨后我们很快就决定合作，2024 年见面，2025 年 1 月第一条改造产线就投产了，只用了 10 个月。”

In the semi-automated workshop of Malaysia's largest natural rubber processor, the traditional production mode was once highly labor-intensive. Today, Guangdong Ruobo Intelligent Robot Co., Ltd., leveraging its own small-model AI algorithms and high-precision servo drive control system, is custom-building smart factories for rubber enterprises in Malaysia, quietly initiating a smart manufacturing revolution across the agricultural and industrial sectors in Malaysia.

Using AI to Conquer Irregular Rubber Block Handling Challenges

Natural rubber is an indispensable raw material for manufacturing tires, medical tubing and even aerospace components. Yet, certain processing stages in the rubber industry have long depended on labor-intensive manual work. In Malaysia, the rubber industry is grappling with rising labor costs.

Seng Fong Holdings Berhad, a natural rubber processor with an annual output of roughly 200,000 tonnes, accounting for over 20% of Malaysia's national rubber exports, has been no exception. "In the past, the latter half of our production line — from the drying kiln all the way through to packaging — was basically all manual,"



天然橡胶生产线数字化中控管理平台

The digital central control management platform for the rubber production line.

广东若铂创始人李兰云认为，如果说市面流行的 AI 大模型为擅长处理语言文字和图像的“文科生”，那么其自研的小模型 AI 算法就是“理科生”，专攻机器人在动态、非标准的物理空间中的精准控制与具体任务执行。

“我们的核心技术有两块：一块是机器人的驱动和控制算法，相当于机器人的‘小脑’，控制运动的精度与流畅度；另一块是 AI 算法，也就是‘大脑’，负责感知、决策和规划。”据李兰云介绍，这两

said Er Hock Lai, the company's chairman. "After finding Guangdong Ruobo and conducting in-depth discussions, we soon decided to cooperate. We met in 2024, and the first upgraded production line went into operation in January 2025. It took just 10 months."

Li Lanyun, founder of Guangdong Ruobo Intelligent Robot Co., Ltd., compares the popular large AI models on the market to liberal arts students who are adept at handling language and images, but likens his company's independently developed

套完全自研的底层算法实现了从底层逻辑到上层应用的无缝闭环。

面对橡胶加工中“胶块异形”的难题，项目团队在产线上部署了 3D 相机和激光扫描设备，结合自研 AI 算法，让机械臂拥有了“眼睛”和“大脑”。系统能实时识别每一块不规则橡胶的形状、位置和预估重量，并自主决策如何抓取 35 公斤胶块挤压成型。

橡胶加工加速智能转型：从一条产线到多条产线

2025 年初，第一条改造产线在马来西亚正式投产，产线的人力成本降低 20% 至 30%。余福来算了一笔账：“现在产线除了必要的操作工外，再加两三个工程师看管就够了。整个工厂管理效率大幅提升。产线的产能和产品质量得到了质的飞跃。”在第一条产线改造成功后，盛丰控股立即启动了第二条、第三条产线的改造。

当前，马来西亚政府层面已明确将人工智能、机器人技术和自动化

small-model AI to a science student, built specifically for precise control and concrete task execution by robots operating in dynamic, non-standardized physical environments.

"Our core technology has two parts. The first is the robot's drive and control algorithm, the 'cerebellum' of the robot that governs the precision and fluidity of its movements; the second is the AI algorithm, the 'cerebrum' that is responsible for perception, decision-making and planning," Li explained, adding that these two sets of fully self-developed foundational algorithms allow Ruobo to achieve a seamless closed loop from underlying logic to user application.

To tackle the challenge of irregularly shaped rubber blocks in processing, the project team deployed 3D cameras and laser scanning equipment along the production line, paired with its AI algorithm, giving the robotic arms "eyes" and a "brain." The system identifies in real time the shape, position and estimated weight of each complex-shaped rubber block, and then autonomously determines how to grasp 35 kilograms of rubber for compression molding.

搭载 AI 算法的生产线自动转运半成品橡胶块，完成工位间衔转

An AI-powered production line automatically transfers semi-finished rubber blocks between workstations.

列为橡胶行业数字化转型与资源优化的优先方向。中国 AI 解决方案正融入多种生产制造场景，助力当地产业升级。

深耕大农业：从橡胶智能加工到多元场景应用

据介绍，目前小模型 AI 技术已在马来西亚实现落地应用，橡胶智能化加工、自动化割胶、园区智能管理等项目稳步运行。项目团队也在攻关“无人割胶机”，旨在解决割胶环节人工短缺这一难题。从棕榈种植、榴莲种植采收、产品溯源与深加工到禽类智慧养殖等领域，小模型 AI 技术正加速向多元产业场景延伸。

“传统工业机器人发展空间饱和，人形机器人还在探索应用场景。我们的思路是，用十分之一的成本，解决客户最迫切的实际问题。”李兰云说。

从攻克橡胶加工难题到赋能产业升级，中国小模型 AI 技术正在为传统制造业转型写下生动注脚，AI 赋能之路越走越宽。（孟盈如）

Accelerating Smart Transformation in Rubber Processing: From One Production Line to Multiple Production Lines

At the start of 2025, the first upgraded production line became operational in Malaysia. The labor costs on the line fell by 20% to 30%. "Now, beyond the essential operators, it's enough to have another two or three engineers to supervise the production line. Overall factory management efficiency has improved dramatically. The production capacity and product quality of the entire line have taken a qualitative leap," Ir Hock Lai said. With the success of the first line's upgrade, Seng Fong promptly initiated upgrades on the second and third lines.

The Malaysian government has explicitly designated AI, robotics and automation as priority areas for the digital transformation and resource optimization of the rubber industry. Chinese AI solutions are now being integrated into a broad range of manufacturing scenarios, helping drive local industrial upgrading.

部署了无人割胶机的天然橡胶树林

The natural rubber plantations where the automated tapping machines have been deployed.

Expanding the Business Scope from Smart Rubber Processing to Diverse Applications

It is learned that small-model AI technology has already been deployed in Malaysia across several projects, with intelligent rubber processing, automated rubber tapping and smart industrial park management projects all running steadily. The project team is also working to crack the challenge of making an unmanned rubber tapper to tackle the labor shortage in the tapping process. From palm cultivation, durian farming and harvesting, product traceability and deep processing, to intelligent poultry farming, small-model AI technology is rapidly extending into a wide range of industrial applications.

"The traditional industrial robot market is saturating, and humanoid robots are still searching for their use scenarios. Our approach is to solve customers' most pressing problems at one-tenth of the cost," said Li Lanyun.

From tackling challenges in rubber processing to empowering industrial upgrading, China's small-model AI technology is writing a vivid chapter in the transformation of traditional manufacturing — and the path of AI empowerment is growing ever broader. (Meng Yingru)

“数字智脑”点亮智利电网

A "Digital Brain" Energizes Chile's Power Grid

位于智利阿里卡和帕里纳科塔大区的 CGH Transmisión 公司输电线路

Transmission lines of CGH Transmisión in the Arica y Parinacota Region, Chile.

2026 年 4 月，智利电力总公司（CGE）调度中心的屏幕上数据涌动，一条预警信号自动弹出，相应的处置建议即刻生成：“建议优先关注山地沿线区段，提前核查附近抢修力量和备品备件准备情况。”

这套来自中国的“数字智脑”，除了通过气象监测预警守护电网运维，还在现场作业、客户服务等环节发挥着“智”能力，悄然改变着智利电网的运行方式，成为两国智慧能源合作的生动注脚。

跨越太平洋的“握手”

在智利，暴风雪、寒潮等极端天气对当地电力系统带来一定挑战。CGE 作为服务智利 43% 配电用户的大型输配电公司，在设备运维、现场作业、风险管控以及客户服务等方面的数智化转型需求迫切。

2025 年 5 月 20 日，一场跨越太平洋的云端对话正在进行，30 余名中智电网专家围绕技术标准和应用场景展开深度研讨。

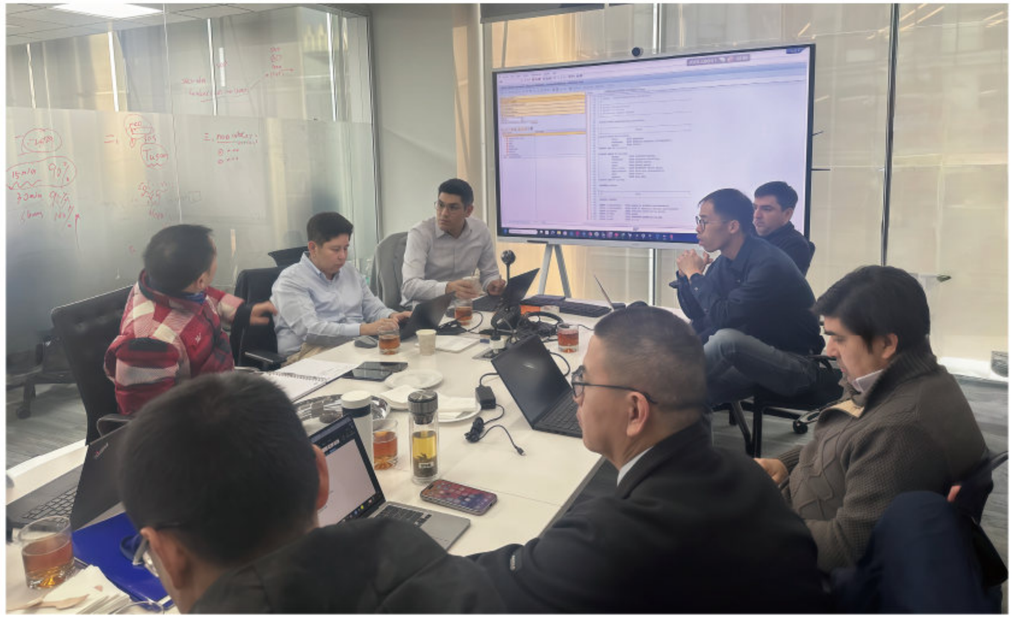
CGE 数字化转型负责人克里斯蒂安提出：“我们需要的不只是技术，

In April 2026, data flashed on the screens at the dispatch center of Compañía General de Electricidad (CGE) in Chile. After an alert popped up automatically, a corresponding action recommendation was generated instantly: "Priority is advised for sections along the mountainous routes. Please verify in advance the readiness of nearby repair crews, necessary materials and spare parts."

Beyond safeguarding grid operation and maintenance through meteorological monitoring and early warning, this "digital brain" from China is also putting its intelligence to work in field operations, customer service and other spheres. It is quietly transforming the way Chile's power grid operates, standing as a vivid illustration of smart energy cooperation between China and Chile.

A "Handshake" Across the Pacific

In Chile, extreme weather such as snowstorms and cold waves poses some challenges to the local power system. As a major power transmission and distribution company serving 43% of customers in Chile, CGE has an urgent need for digital and intelligent transformation in equipment operation and maintenance, field operations, risk control and customer service.



中方团队与智利电力总公司人员就数智化合作开展讨论

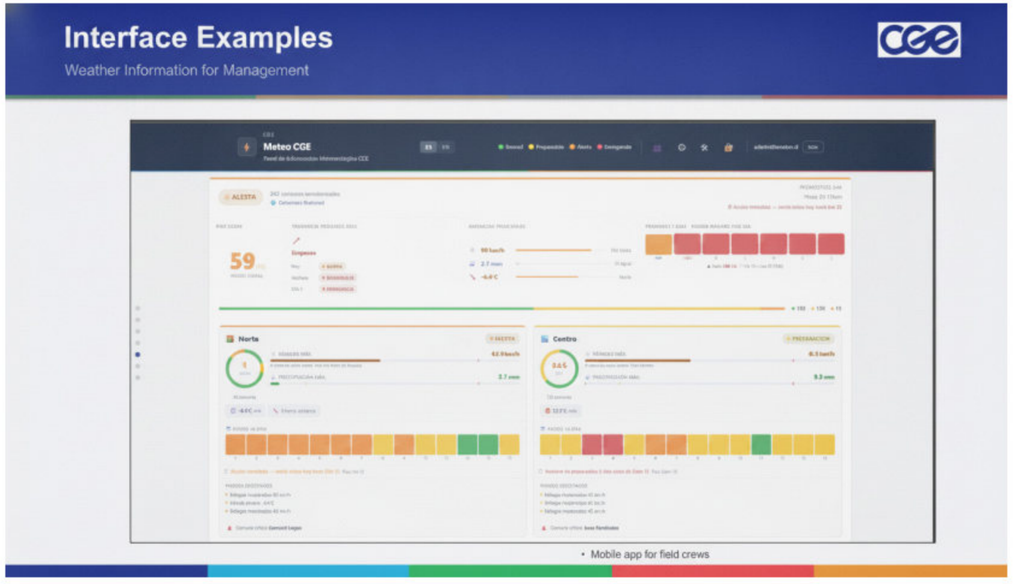
The Chinese team and the CGE side discuss digital and intelligent cooperation.

而是一套能在这片土地上扎根的‘能源智慧大脑’。”国网浙江省电力有限公司给出明确回应：我们不是简单提供软件，而是将标准、框架、人才等要素融入项目之中，让数字化、智能化的电力应用在智利扎根。

这次云端对话为双方合作奠定了基础。中方迅速组建数字化团队，采用“前方驻点攻坚 + 后方远程赋能”的联动体系，推动各项需求

On May 20, 2025, a video conference spanning the Pacific Ocean brought together more than 30 Chinese and Chilean grid experts for in-depth discussions on technical standards and application scenarios.

"What we need isn't just technology, but a 'smart brain for energy' that can truly take root in this land," said Cristián Ormeño Cabal, head of digital transformation of CGE. In response, State Grid Zhejiang Electric Power Co., Ltd. responded that



气象预报智能体界面

Interface of the Meteorological Intelligence for the Electric Service.

在项目中落地。

从“模糊地图”到“精准画像”

2025年6月，一场罕见的冬季风暴席卷安第斯山脉南段的智利湖区，这片区域有数千公里电力线路，任何一处故障都可能让众多家庭断电。彼时，克里斯蒂安手里的气象工具只能给出粗线条的周预报，“就像拿着一张模糊的地图去打仗，暴风雨一来，我们只能等用户报修，再派人去查，一来一回就是几个小时。”他说。

如今，“数字智脑”有了应对之策。2026年3月，气象预报智能体率先上线，成为“数字智脑”落地智利的种子。它实现了对当地345个市镇的监测覆盖，具备未来16天天气趋势研判和未来72小时精细化天气预报能力，每4小时自动更新，实现从气象影响电力系统的“人工解读”向“智能识别、主动预防、快速响应”转变。

这颗种子发芽，需要在更多数据中得到验证。CGE每月产生超1.8万张现场抄表照片，传统人工抽检比例有限，一些错误难以及时被识别。基于此，中方团队研发了抄表数据智能校验体，实现了照片内容自动识别、读数和表号自动提取、定位信息自动校验，作业证据被精准划分为有效、可疑、无效三类，形成覆盖图片审核、结果分析和管理看板的闭环能力。

“以前抽查就像大海捞针，现在AI给每一张照片都圈了‘精准画像’。”一位现场抄表员说。

从“前端减负”到“后端提速”

如果说气象和抄表是“前端减负”，那么欠费追缴则是“后端提速”的关键。为助力CGE解决欠费追缴面临的处理周期长、过程追踪困难等问题，中方团队开发了欠费追缴智能体。从异常通知导入、用

rather than simply providing software, it would integrate standards, frameworks and talents into the project, so that digital, intelligent power applications could take root in Chile.

This video conference laid the foundation for smart energy cooperation between the two sides. The Chinese team quickly formed a digital unit and adopted a coordinated model in which on-site task forces worked in tandem with remote support from the headquarters to turn each demand into reality on the ground.

From "Blurry Map" to "Precise Picture"

In June 2025, a rare winter storm swept through the Chilean Lake District in the southern Andes, a region with thousands of kilometers of power lines where a single fault could cut power supply to countless households. At the time, the only meteorological tool Ormazábal had on hand offered nothing more than a rough weekly forecast. "It was like going into battle with a blurry map. Once the storm hit, all we could do was to wait for customers to report outages and then send someone out to check. The round trip alone could take hours," he said.

Today, the "digital brain" has turned these uncertainties into manageable tasks. In March 2026, the Meteorological Intelligence for the Electric Service, an intelligent meteorological forecasting platform for power system operations, was launched, becoming the seed of the "digital brain" to take root in Chile. It now covers 345 local municipalities, capable of providing weather trend analysis up to 16 days in advance and high-resolution 72-hour forecasts. The forecast is automatically updated every four hours. This has shifted the way of handling meteorological impacts on the power system from manual interpretation to intelligent recognition, proactive prevention and swift response.

For the seed to grow, it needs to be validated with more data. CGE generates more than 18,000 field meter-reading photos every month, but traditional manual spot checks were limited in scope and often failed to detect errors in time. To address this issue, the Chinese team developed an intelligent verification system for meter-reading field evidence, which can automatically

户与资费信息匹配、平均用电量测算、佐证材料校验，到审批流转、开票催收和结果跟踪，全流程“一单”办理，处理时间从 2 个月缩短到 1 周。CGE 财务主管奥斯卡感慨地说：“以前追缴像跑马拉松，现在变成了百米冲刺。”

之后，面向客户投诉受理、跟踪、反馈全流程，用户投诉管理智能体也应运而生，对投诉信息的智能识别和精准分类准确率超过 90%，助力 CGE 提升客户服务效率。

与此同时，中方团队还协助梳理当地电力工程建设标准化流程，开展设备管理与技术监督体系建设，助力智利电力系统智能化、可持续发展。

2026 年 3 月，克里斯蒂安在给中方团队的感谢信中写道：“感谢你们帮助我们构建了数字化项目全生命周期——从可行性到实施，同时展现出良好的判断力，将这些参考框架适配到 CGE 的本地现实中。”

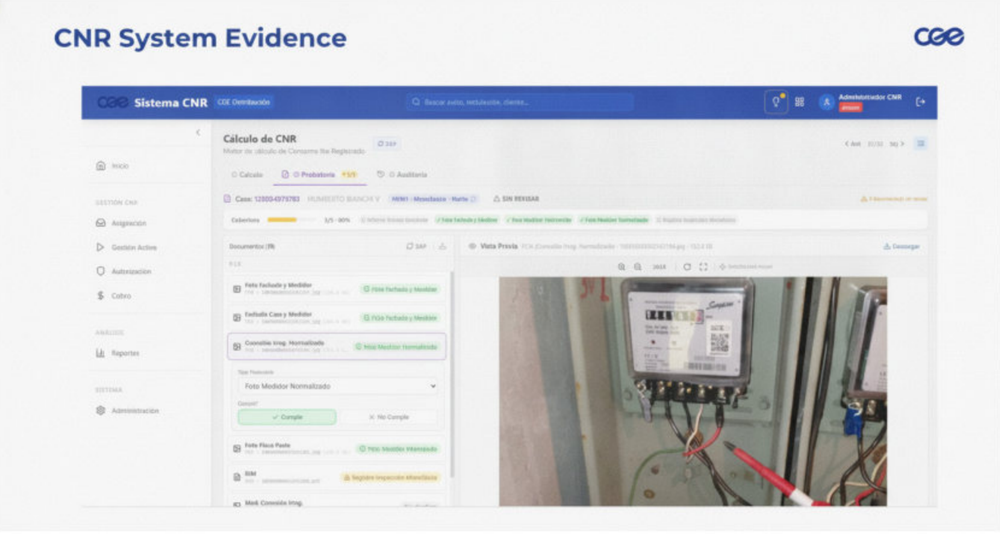
如今，克里斯蒂安从“数字智脑”的使用者变成推广者。他在 CGE 内部培训会上分享经验，带着同事熟悉系统操作，“这条合作新通道，不只是从中国到智利，更是从过去到未来。”（戴琳琳）

recognize photo content, extract readings and meter numbers, and verify location information. Work evidence is now classified precisely into three categories — valid, suspicious and invalid — forming a closed-loop capability spanning photo review, result analysis and management dashboards.

"Spot checks used to be like looking for a needle in a haystack. Now AI draws a 'precise picture' for every single photo," said a meter-reading staff.

From "Front-End Burden Reduction" to "Back-End Acceleration"

If meteorological forecasting and meter reading represent "front-end burden reduction", then collecting overdue payments is the key to "back-end acceleration". To help CGE tackle the long processing cycles and difficulties in tracking progress that had plagued overdue-payment collection, the Chinese team developed the CNR Integrated Management System, enabling the entire process to be now handled as a single, seamless workflow, covering importing anomaly notices, matching customers and price information, calculating average power consumption, verifying supporting documents, approval workflows, billing and collection, and tracking results. The processing time has been cut from two months to just one week. "In the past, arrears recovery was like running a marathon, now it has become a hundred-meter dash," said Oscar Facusse, CGE's finance director.



欠费追缴智能体中用户用电参数与分析界面

User electricity parameters and analysis interface in the CNR Integrated Management System.

Following that, a customer complaint management system, the CGE Claims Management System, was created to cover the entire process of receiving, tracking and responding to customer complaints, achieving over 90% accuracy in intelligently identifying and precisely classifying complaint information, and thus helping boost customer service efficiency.

At the same time, the Chinese team has also helped streamline standardized procedures for local power engineering construction and has supported the development of equipment management and technical oversight systems, contributing to the intelligent and sustainable development of Chile's power system.

In March 2026, in a letter of thanks to the Chinese team, Ormazábal wrote: "Thank you for helping us set up the full life cycle of the digital project, from feasibility through implementation, while showing real judgment in adapting these reference frameworks to CGE's local realities."

Today, Ormazábal has transformed from being a user of the "digital brain" to one of its advocates. He shares his experience at CGE's internal training sessions and guides colleagues through system operations. "This new channel of cooperation runs not just from China to Chile, but also from the past into the future," he said. (Dai Linlin)

中埃携手“向海寻药”

China and Egypt Join Hands in Search for New Medicine from the Sea

2025年5月，在开罗举办的中埃海洋药物研究合作项目启动会现场

Photo shows the scene of the launching ceremony of the China-Egypt marine drug research cooperation project held in Cairo in May 2025.

2023 年 4 月，中埃科研人员在红海红树林湿地采集沉积物样本
In April 2023, Chinese and Egyptian researchers collect sediment samples.

埃及红海海岸，潮水缓缓退去。退潮后露出的红树林湿地里，中埃科研人员卷着裤腿、光着脚，踏行在海水中，不时将一份份沉积物样本小心翼翼地装入采样容器。这看似普通的泥沙中，或许就隐藏着未来新型抗菌药物的“种子”。

“这些沉积物样品包含着成千上万种微生物。我们将借助中国的人工智能筛选平台，从中筛选能产生新型抗菌药物先导物和食品抑菌剂的微生物菌株。”埃及国家研究中心马哈茂德·伊马姆副教授一边查看样品编号一边说。

从红海岸边的一捧泥沙，到人工智能驱动的药物研发平台；从一封跨越国界的电子邮件，到持续十余年的科研合作，中埃科学家正在共同书写科技创新合作的新故事。

一封跨越山海的邮件开启合作之旅

时间回到 2014 年。浙江工业大学海洋药物团队负责人王鸿教授收到一封来自埃及的电子邮件，发件人正是伊马姆。当时，中国科技部发布了“亚非国家杰出青年科学家来华工作计划”，为广大发展中国家的年轻科研人员提供以访问学者身份来中国学习交流的机会。

On the coast of the Red Sea, the tide slowly receded. In the mangrove wetlands exposed by the ebbing waters, Chinese and Egyptian researchers rolled up their trouser legs and waded barefoot through the seawater, carefully collecting sediment samples into containers. Hidden within what appears to be ordinary mud and sand may lie the "seeds" of future novel antimicrobial drugs.

"These sediment samples contain tens of thousands of species of microorganisms. Using China's AI screening platform, we will identify microbial strains capable of producing lead compounds for novel antimicrobial drugs and antimicrobial agents for food," said Mahmoud Emam, associate professor at the Pharmaceutical Industries Research Institute of Egypt's National Research Centre (NRC), while checking the sample serial numbers.

From a handful of sediment on the Red Sea coast to an AI-powered drug R&D platform, and from an email sent across borders to a research collaboration spanning over a decade, Chinese and Egyptian scientists are together writing a new chapter of international sci-tech and innovation cooperation.

An Email Across Continents Marks the Start of Cooperation

The story dates back to 2014, when Wang Hong, professor and head of the marine

“埃及北邻地中海、东邻红海，海洋生物资源丰富，但海洋药物和健康产品研发尚处于初级阶段。”伊马姆在邮件中表达了对学习中国先进技术以开发自己国家海洋资源的渴望。

2015 年 1 月，这位埃及青年科学家如愿来到杭州。谁也没有想到，这次交流成为浙江工业大学与埃及国家研究中心长达十余年合作的起点。此后，双方科研团队围绕海洋药物研发持续开展合作，研发模式也从依赖经验积累转向利用 AI 技术。

AI 赋能“向海寻药”效率更高

海洋是一座天然的“生物资源基因宝库”，为寻找新型药物提供了广阔空间。然而，海洋药物发现犹如“大海捞针”，通常耗时数年，成功率却不高。

近年来，浙江工业大学相继构建了 PSMPA、MSanalyst、PALM-AMP 等多个 AI 驱动的海洋药物智能筛选平台，推动药物先导物研发模式实现从“经验筛选”到“智能设计”的范式转变。这些平台显著提升了海洋“天才”菌株挖掘、新颖天然产物发现及抗菌肽筛选等工作的靶向性与效率，从而大幅提高了药物先导物的发现概率。

抗菌肽筛选模型 PALM-AMP 具备海量基因数据的快速解析能力，可精准预测肽类分子的最低抑菌浓度（MIC）。该模型已从 3 万余个海洋微生物基因组中成功挖掘出数十个高活性新型抗菌肽，相关成果发表在国际微生物学期刊《微生物组》上，并获《自然》《科学进展》等国际知名学术期刊引用。

drug tests at Zhejiang University of Technology (ZJUT), received an email from Emam. At the time, China's Ministry of Science and Technology had launched a program offering outstanding young scientists from Asian and African countries the opportunities to come to China for study and exchange as visiting scholars. "Bordering the Mediterranean to the north and the Red Sea to the east, Egypt is endowed with rich marine biological resources, but the R&D of marine drugs and health products is still at its early stage," Emam wrote in the email, expressing his eagerness to learn China's advanced technologies and apply them to the development of his own country's marine resources.

In January 2015, the young Egyptian scientist arrived in the Chinese city of Hangzhou as he had hoped. No one could have imagined that this exchange would become the beginning of a partnership between ZJUT and NRC that has spanned more than a decade. Since then, the research teams from both sides have continued their collaboration on marine drug development, and the R&D model has shifted from relying on accumulated experience to leveraging AI technology.

AI Increases Efficiency of Marine Drug Discovery

The ocean is a genetic treasure trove of biological resources, providing vast potential for discovering new drugs. However, identifying new marine drugs in the sea is like searching for a needle in a haystack. The process usually takes years, with low success rates.

Over the past few years, ZJUT has successively developed several AI-powered intelligent marine drug screening platforms, including PSMPA, MSanalyst and PALM-AMP, driving a paradigm shift in the R&D mode of drug lead compounds

科研人员正通过海洋药物智能筛选平台开展药物筛选研究

A researcher is conducting drug screening studies on the marine drug intelligent screening platform.

来中国交流学习的埃及国家研究中心研究人员谢琳·马格迪借助中国团队开发的 AI 平台，快速筛选出 30 多种具有应用前景的抗生素候选先导物和食品抑菌剂候选先导物。“过去需要两年时间完成的药物先导物筛选和验证工作，现在几个月就能完成。”她说，“应用该平台开发红海微生物资源成为我们合作的新方向。”

from experience-based screening to intelligent design. These platforms have markedly improved the precision and efficiency of identifying "talent" marine bacterial strains, discovering novel natural products and screening antimicrobial peptides, substantially raising the probability of finding drug lead compounds.

红海寻“宝”推动中埃创新型药物研发

2025 年，中埃研究团队沿埃及红海海岸开展联合科学考察，采集红树林生态系统的沉积物样本。此后，借助海洋药物智能筛选和预测平台，完成了 50 余株微生物基因组测序与代谢潜力分析。目前，已有两种候选抗菌药物进入临床前成药性评价阶段。

同年 10 月，埃及国家研究中心与浙江工业大学签署了一份科学合作协议，旨在进一步加强联合研究、知识交流与创新。“这一里程碑将开启双方战略合作的新时代，有助于推动创新型药物研发项目的发展，并促进两国在公共卫生、食品安全以及科学水平方面的进步。”伊马姆说。

据悉，双方计划未来搭建集数据共享、算法协作、实验验证、人才培养于一体的合作平台，共建拟模超 1 万株的中埃红树林微生物基因组数据库，以期发现 200 余种抗菌代谢产物，并从中筛选出 20 余种具有开发潜力的候选化合物。此外，双方还将探索发起“中阿人工智能医药创新联盟”，着力打造跨区域协同创新网络。

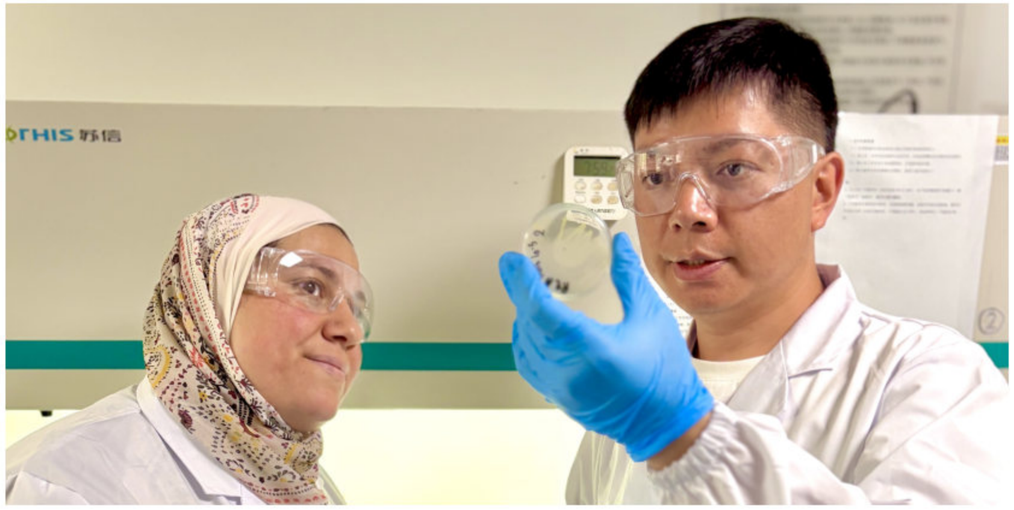
“我们分享的不只是技术，更是创新理念和合作模式。”王鸿说，AI 技术不再是简单的数字和代码符号，而是由云端大数据组成的一条海洋药物研发“快速通道”，海洋生物中数百万计的生物活性成分正在这条“快速通道”中等待着与科学家们来一场“AI 探宝奇遇”。中埃海洋药物研究合作正是利用这条“快速通道”开展国际合作的一次有益实践。（张健）

PALM-AMP, an AI-driven antimicrobial peptide screening model, is capable of rapidly analyzing massive genomic datasets, and can precisely predict the minimum inhibitory concentration of peptide molecules. The model has helped researchers successfully identify dozens of highly active new-type antimicrobial peptides from over 30,000 marine microbial genomes. The findings were published in the international microbiology journal Microbiome, and have been cited by leading academic journals including Nature and Science Advances.

Sherien Magdy, a researcher from Egypt's NRC who came to China for an exchange program, used the AI platform developed by the Chinese team to rapidly screen more than 30 promising antibiotic lead compound candidates and food antimicrobial agents lead compound candidates. "Work on the screening and validation of drug lead compounds that used to take two years can now be completed in a few months," she said. "Leveraging this platform to develop the microbial resources in the Red Sea has become a new direction for our collaboration."

"Treasure Hunt" in the Red Sea Promotes China-Egypt Innovative Drug R&D

In 2025, the Chinese and Egyptian research teams jointly conducted a scientific expedition along the Red Sea coast, collecting sediment samples from mangrove ecosystems. Using the intelligent marine drug screening and prediction platform, the researchers subsequently completed genome sequencing and metabolic potential analysis of more than 50 microbial strains. To date, two candidate antimicrobial drugs have entered the preclinical



2026 年 5 月，中埃科研人员在浙江工业大学对“天才”菌株进行实验验证

In May 2026, Chinese and Egyptian researchers conduct experimental validation of "talent" marine bacterial strains at ZJUT.

druggability evaluation stage.

In October of the same year, NRC and ZJUT signed a scientific cooperation agreement aimed at further strengthening joint research, knowledge exchange, and innovation. "This milestone will open a new era of strategic cooperation between the two sides, helping advance innovative drug development projects and promote improvement in public health, food safety and scientific capacity in both countries," said Etosm.

The two sides plan to build a cooperation platform that integrates data sharing, algorithmic collaboration, experimental validation and talent cultivation, and jointly establish a China-Egypt mangrove microbial genome database covering more than 10,000 strains, with the goal of discovering over 200 antimicrobial metabolites and identifying more than 20 candidate compounds with development potential. In addition, the two parties will explore the launch of a China-Arab AI pharmaceutical innovation alliance, working to create a cross-regional collaborative innovation network.

"What we are sharing is not just technology, but also innovative concepts and new cooperation models," said Wang Hong. AI technology is no longer merely about simple numbers and code symbols. It serves as a "fast lane" for marine drug R&D built on cloud-based big data, where millions of bioactive compounds from marine organisms await their moments of encounter with scientists in an AI-powered treasure hunt. The China-Egypt marine drug research collaboration is a valuable practice of harnessing this "fast lane" to advance international scientific cooperation. (Zhang Jian)

AI 宫颈癌筛查技术呵护“她”健康

AI-Powered Cervical Cancer Screening Technology Safeguards Women's Health

巴基斯坦国家医院妇产科教授托巴·扎伊拉在查看 AI 宫颈癌筛查结果

Tabat Zehra, professor at Liaquat National Hospital, reviews AI cervical cancer screening results.

巴基斯坦伊斯兰堡的 AI 云诊断实验室内，一名当地技术人员将一张宫颈细胞学玻片轻轻放入便携式扫描仪。几分钟后，玻片的数字化图像通过 5G 网络传送到数千公里外中国武汉的云端平台。人工智能系统在数秒内完成判读，诊断结果实时回传至巴基斯坦医生的终端，整个过程无任何专科医生在场。

这项源自中国的 AI 宫颈癌筛查技术，正在为发展中国家女性健康构筑起一道可及、可信、可持续的防护屏障。

AI 诊断大模型重构宫颈癌筛查体系

宫颈癌是威胁全球女性健康的“沉默杀手”，也是可通过早期筛查有效预防和阻断的恶性肿瘤。长期以来，传统的宫颈癌筛查方式存在主观判断误差、技术人员培养周期长等问题。针对这一难题，武汉兰丁智能医学股份有限公司（简称“兰丁医学”）自主研发出 CytoBrain 人工智能诊断垂直大模型，构建起“基层取样、智能制片、云端诊断、全域溯源”的全流程智能化筛查体系。

该技术集成高精度智能机械臂与高清扫描系统，实现了标本制片、数字化扫描等基础操作的标准化与自动化。依托 AI 辅助诊断能力，单例样本的人工辅助诊断时间可缩短至数秒，单日最大筛查处理量可达 5 万例，相当于 500 名专业病理医生的工作效率，显著提升了病理筛查的准确性与诊断效率。基于超 1400TB 病理数据和千万级临床样本的持续迭代优化，技术诊断准确率达 99%，敏感性与特异性均超过 90%。

Inside an artificial intelligence (AI) cloud diagnosis lab in Islamabad, Pakistan, a local technician carefully places a cervical cytology slide into a portable scanner. Within minutes, the digitized image travels via the 5G network to a cloud platform thousands of kilometers away in the city of Wuhan, China. An AI system reads and analyzes the image in seconds, and the diagnostic results are transmitted back to the terminal of the doctor in Pakistan in real time. The entire process is completed without the presence of specialist doctors.

This AI cervical cancer screening technology from China is building an accessible, reliable and sustainable shield for women's health across the developing world.

AI Diagnostic Large Model Reshaping the Screening System

Cervical cancer is a "silent killer" threatening women's health worldwide, and is the one that can be effectively prevented and blocked through early screening. For a long time, traditional cervical cancer screening has been plagued by challenges such as subjective diagnostic bias and long training periods for technicians. To address this global challenge, Wuhan Landing Intelligence Medical Co., Ltd. (Landing Med) has independently developed CytoBrain, a vertical large AI diagnostic model, and built a full-process intelligent screening system encompassing "sample collection, intelligent slide preparation, cloud-based diagnosis and full-chain traceability".

The technology integrates smart high-precision robotic arms and high-definition scanning, thereby standardising and automating fundamental procedures such as slide preparation and digital scanning. Thanks to AI-assisted diagnostic capabilities, the time required for manual assisted diagnosis per sample can be shortened to just seconds, and the maximum daily processing capacity can reach 50,000 cases,

高精度智能机械臂正在进行标本制片

A high-precision intelligent robotic arm is performing specimen preparation.

跨越山海的健康接力

科技无国界，AI 宫颈癌筛查技术在越来越多的国家和地区展示了中国技术的民生温度和专业能力。

2023 年 1 月，巴基斯坦首家 AI 云诊断实验室在伊斯兰堡正式投入使用，实现了中国医疗模式的跨国落地。2024 年，兰丁联合研究团队会同巴基斯坦阿迦汗大学、利雅卡特国家医院开展 100 例确诊样本的测试验证研究，结果显示，AI 模型对阳性病例的敏感性达到 100%。

2025 年 3 月，项目团队携 LD Cyto2200 扫描仪及宫颈细胞学 AI 分析工作站进驻巴西圣保罗多家私立实验室，对 500 余张采用当地制片染色工艺的既往病例开展系统性测试。测试结果显示，相比传统人工筛查，AI 阳性检出率提高 5.9 个百分点，整体阅片时间缩短约 45%，不少人工初筛遗漏的阳性病例被 AI 精准识别。同期，巴西马托格罗索联邦大学教授团队依托兰丁云平台完成约 200 张玻片测试，综合准确率达 94.6%，复核后敏感性提升至 95.2%。团队评估认为，AI 可有效减少医生主观判读差异，假阳性率更低，在宫颈癌筛查领域拥有广阔应用前景。

2025 年 4 月，兰丁医学与伊拉克肿瘤与基因科研中心签署战略合作协议，提供定制化的智能化筛查方案，赋能当地肿瘤防治体系。同年，兰丁医学与华为云达成合作，共建全栈国产化 AI 筛查方案，为更多国家和地区提供稳定可靠的技术支撑。

技术普惠守护“她”健康

中国与全球其他 193 个国家和地区共同承诺，在 2030 年实现 70% 的

equivalent to the combined working efficiency of 500 professional pathologists. The new technology markedly improves both the accuracy and efficiency of pathological screening. Based on continuous iterative optimization using over 1,400 TB of pathology data and tens of millions of clinical samples, the system has achieved a diagnostic accuracy rate of 99%, with both sensitivity and specificity exceeding 90%.

A Relay for Health Across Mountains and Oceans

Technology knows no borders. In a growing number of countries and regions, AI cervical cancer screening technology has demonstrated the people-centered warmth and professional competence of Chinese technology.

In January 2023, Pakistan's first AI cloud diagnosis laboratory was launched in Islamabad, marking the successful overseas implementation of China's healthcare model to foreign soil. In 2024, Landing Med partnered with Aga Khan University and Liaquat National Hospital in Pakistan to conduct a validation study on 100 confirmed samples. The results showed that the AI model achieved 100% sensitivity in detecting positive cases.

In March 2025, the project team brought the LD Cyto2200 scanner and a cervical cytology AI analysis workstation to several private laboratories in Sao Paulo, systematically testing more than 500 archival slides prepared using local staining techniques. The results showed that compared with traditional manual screening, AI scanning increased the positive case detection rate by 5.9 percentage points and cut overall slide interpretation time by approximately 45%, with AI accurately identifying many positive cases that had been missed by initial manual screening. Concurrently, a research team from the Federal University of Mato Grosso completed testing of some 200 slides on the Landing Med cloud platform, achieving an overall accuracy of 94.6%, with

2026 年，AI 宫颈癌筛查实践参加世界经济论坛 MINDS Exchange Series 线上分享会

AI-powered cervical cancer screening practice at the online sharing session of the WEF MINDS Exchange Series held in 2026.

妇女在 35 岁和 45 岁之前各接受一次高效宫颈癌筛查。截至目前，该项 AI 宫颈癌筛查技术已进入加纳、越南、柬埔寨等 12 个国家，为全球超 1300 万名妇女提供筛查服务。

相较于传统筛查模式，AI 技术具有轻量化、低成本、易普及优势，普通基层医护人员经过 3 天培训即可学会取样操作。对于发展中国家的普通女性而言，这项技术的落地解决了“筛查无门、求医无路”的困境，实现早发现、早诊断、早干预。

2025 年，兰丁 AI 宫颈癌筛查项目入选世界经济论坛 MINDS 计划，

the sensitivity rising to 95.2% after review. The team concluded that AI can effectively reduce variability in subjective physician interpretation, lower the rate of false-positive cases, and offer broad application potential in cervical cancer screening.

In April 2025, Landing Med signed a strategic cooperation agreement with the Iraqi Centre for Cancer & Medical Genetics Research to deliver a customized intelligent screening solution and empower Iraq's cancer prevention and treatment system. That same year, Landing Med partnered with Huawei Cloud to jointly develop a domestic full-stack AI screening solution to deliver stable, reliable technological support to more countries and regions.

实验室人员使用显微图像扫描仪进行病理切片数字化扫描

A laboratory staff uses a microscopic image scanner to scan a pathological slide.

成为全球人工智能在医疗健康领域应用的典范。项目团队研发的"AI大模型＋云平台＋便携设备"方案，助力发展中国家以较低成本构建起宫颈癌防控体系，降低公共医疗支出。

从长江之畔到印度洋之滨，从光谷实验室到圣保罗诊所，一台台运转的智能扫描仪，一张张被AI守护的玻片，汇聚成中国技术守护"她"健康的温暖力量。这项源自中国的创新技术，正在用实践证明：人工智能的价值，不止于技术的迭代突破，而在于让每一个生命，都能被看见、被守护、被温暖。（吴双）

Inclusive Technology Protecting Women's Health

China, along with 193 other countries and regions around the world, has jointly committed to ensuring that 70% of women receive efficient cervical cancer screenings before the ages of 35 and 45 by 2030. To date, the AI cervical cancer screening technology has entered 12 countries, including Ghana, Vietnam and Cambodia, delivering screening services to more than 13 million women worldwide.

Compared with traditional screening models, AI technology features the advantages of being lightweight, low-cost, and easy to popularize. Ordinary grassroots healthcare workers manage to collect samples after just three days of training. For women in developing countries, the deployment of AI technology effectively solves the long-standing dilemma of lacking accessible screening and medical services, enabling early detection, diagnosis and intervention.

In 2025, the Landing Med AI cervical cancer screening technology, included in the World Economic Forum's MINDS (Meaningful, Intelligent, Novel, and Deployable Solutions) program, serves as a global paradigm for the application of AI in the healthcare sector. The solution of "AI model, cloud platform and portable devices" developed by the project team helps developing countries build cervical cancer prevention and control systems at a low cost, reducing public healthcare expenditures.

From the banks of the Yangtze River to the shores of the Indian Ocean, and from the Optics Valley Laboratory to the clinics in Sao Paulo, smart scanners and pathological slides, empowered by AI, together serve as a powerful testament to the people-centered warmth of Chinese technology safeguarding women's health. This Chinese innovation is proving through action that the value of AI lies not merely in technological breakthroughs, but in ensuring that every life can be seen, protected and cherished. (Wu Shuang)