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THE NEXT WAVE

Who Codes the Future — The AI Developer Ecosystem Report

by Zhihu × ModelScope

Introduction

The global wave of artificial intelligence has given rise to a vast, creative, and fast-evolving community of developers. They follow the latest research, explore new models, and turn innovation into real-world productivity — becoming the driving force of the AI era.

Within this movement, **Zhihu (知乎)** stands out as a hub for China's AI developers. Its professional, in-depth community fosters discussion that bridges theory and practice — from frontier research to applied insights. Zhihu has become both a repository of high-quality developer content and a window into China's AI technology and talent landscape.

Meanwhile, **ModelScope (魔搭)** as a leading AI model community, empowers developers with open models and toolchains, accelerating innovation and collaboration.

Together, Zhihu and ModelScope present The Next Wave: Who Codes the Future — The AI Developer Ecosystem Report, a deep dive into China's AI developer ecosystem and the trends shaping its future.

Research Design and Execution Overview

Quantitative Research

Scope & Participants

Survey of 554 AI-era developers, including:

Developers:

with solid coding skills, capable of using models or APIs for software, algorithm, or application development.

AI Tool Users:

non-technical professionals proficient in AI-native tools like Cursor and ChatGPT, applying them for code generation and workflow automation.

Method

Online questionnaire.

Channels

Distributed via Zhihu, ModelScope, GuanCha (观猹), and Research AI+ communities.

Sampling Criteria

Participants who applied AI-related technologies, models, or tools in work or personal projects within the past six months.

Qualitative Research

Scope & Participants

In-depth interviews with five experienced developers and AI practitioners from various industries and company sizes.

Method

One-on-one interviews.

Key Topics

How AI reshapes personal workflows

The evolution of team collaboration models

Challenges and opportunities in individual skill growth

Perspectives on future technology and industry trends

CONTENTS

Chapter 1

Waves of Change
— China's AI Developers Changing the World

The wave of artificial intelligence is sweeping the globe. In China, this momentum is fueled by a unique combination of trillion-dollar market potential, vast data resources, a complete industrial chain, and strong national policies, creating unprecedented opportunities for technological advancement.

At the heart of this wave is a growing community of millions of developers, driving AI from laboratories to frontline industries, transforming tools into productivity and creativity.

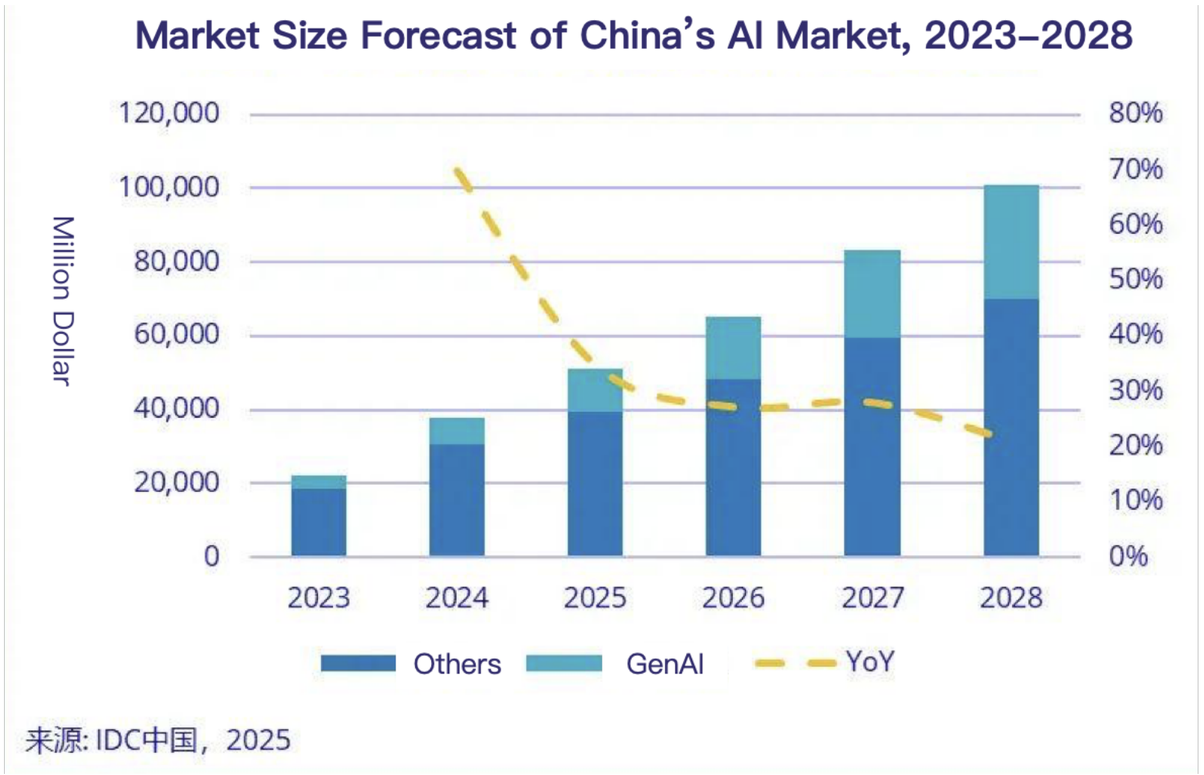
This chapter explores the macro landscape of AI development in China, examining how AI technologies are reshaping development paradigms and highlighting the pivotal role developers play as the primary agents of innovation.

1.1 Market Landscape and Outlook

China's AI market is experiencing explosive growth.
In 2024, the industry is valued at approximately CNY 700 billion, with rapid investment acceleration. Over the next few years, the total market is expected to exceed trillion-yuan scale. Key segments such as generative AI and AI Agents are leading in growth, attracting significant capital and demonstrating potential to reshape the industry landscape.

Market Size and Forecast

2024: AI industry size ~ **CNY 700 billion**, with growth rates between **15%–30%**.
2024: AI investment ~ **CNY 300 billion**, annual growth exceeding **70%**.



来源: IDC中国，2025

2030 (forecast): Industry size expected to surpass CNY 1 trillion.
2025–2035: Projected CAGR of 15.6%.
2028 (forecast): Total investment expected to exceed CNY 1 trillion.

Insights & Highlights

- Generative AI is expanding rapidly, with a five-year CAGR of 63.8%, becoming a major investment hotspot.
- The intelligent computing market is projected to reach ~USD 25.9 billion by 2025.
- AI Agent market: 2023 size CNY 55.4 billion, expected to grow to CNY 852 billion within five years (CAGR 72.7%).

1.2 Policy & Advantages

Amid the global AI race, China has carved a distinct development path driven by unique strengths. Its core momentum stems from the world's largest internet user base and a highly digitalized society, generating massive data resources. Coupled with a complete industry chain from underlying computing infrastructure to top-level applications and diverse real-world deployment scenarios, these factors continuously drive technological innovation and commercialization, forming a solid foundation for AI growth.

Unique Opportunities in China's AI Development

Massive Data Resources

By June 2025, China's internet user base reached 1.123 billion with an internet penetration rate of 79.7%.

In 2024, national data production reached 41.06 zettabytes (ZB), up 25% year-on-year; projected to reach 136.12 ZB by 2029 (CAGR ~26.9%).

By 2029, around 43% of data is expected to be generated directly in the cloud.

High-frequency, high-density, multi-scenario behavioral data create a natural "data flywheel" for model iteration.

Complete Industry Ecosystem

Upstream: Massive data resources and robust computing infrastructure; AI chips are a key focus.

Midstream: Technology core led by major tech firms and innovative vertical players, strong in computer vision, NLP, and humanoid robotics.

Downstream: The world's largest application market, with rapid commercial cycles across finance, security, smart manufacturing, autonomous driving, and more.

Diverse Application Scenarios

China's broad market offers a rich testing ground for commercial AI applications.

Policy Dividends Driving AI Growth

China has been actively issuing and implementing AI-related policies to position artificial intelligence as a key driver of the next wave of technological innovation and high-quality development.

- 2017: New Generation Artificial Intelligence Development Plan — established the strategic foundation for China's AI development.
- 2025: Opinions on Deepening the Implementation of the "AI+" Action — represents the phase of comprehensive deployment and integrated applications, driving high-quality growth.

Together, these policies provide top-level design and concrete execution guidance for China's AI ecosystem.

The New Generation AI Development Plan — July 2017

The plan outlines a clear three-step strategic roadmap aiming to make China a global AI innovation center by 2030. Each stage defines specific objectives and measurable targets to ensure progress.

The table below summarizes the core content of the first two stages and provides an assessment of current progress.

Phase	Key Goals	Planned Targets	Current Progress
Phase 1 2020 Goals	Industrial Competitiveness	Core AI industry > ¥150B; related industries > ¥1T	Core AI industry reached ¥213.7B in 2023.
	Theory & Technology	Breakthroughs in core technologies, chips, and software	Major progress in AI frameworks and chips.
	Development Environment	Initial AI ethics and policy framework established	Released AI Governance Principles, laying governance foundations.
Phase 2 2025 Goals	Global Competitiveness	Core AI industry > ¥400B; related industries > ¥5T	By 2025, core AI industry expected to exceed ¥700B; targets on track.
	Fundamental Breakthroughs	Self-learning AI achieves major advances, leading multiple fields	Strong in engineering and application; foundational theory still led by the U.S.
	Legal & Ethical Systems	Establish AI laws, ethics, and governance with safety assessment capability	Multi-layered, systematic governance framework in place.
	Broad Application Expansion	AI applied in manufacturing, healthcare, cities, agriculture, and defense	Large-scale adoption across key sectors driving sustained growth.

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Opinions on Deepening the Implementation of the "AI+" Action — August 2025

Key Policies

The 2025 AI+ Action policy aims to promote deep integration of AI across all sectors of the economy and society, driving revolutionary productivity growth and transforming production relations, ultimately shaping a new intelligent economy and society.

Overall Requirements and Development Goals

The policy emphasizes human-centered development, leveraging China's abundant data resources and complete industrial ecosystem. By 2027, AI is expected to achieve wide and deep integration across six key domains.

Six Key Initiatives

✦ AI + Science & Technology

Accelerate scientific discovery and foster interdisciplinary innovation.

✦ AI + Industrial Development

Cultivate AI-native business models, advance digital intelligence in industry and agriculture, and innovate service sector models.

✦ AI + Consumption Enhancement

Expand new service consumption scenarios and develop innovative product consumption models.

✦ AI + Public Well-being

Enable intelligent work practices, effective learning, and high-quality living.

✦ AI + Governance Capability

Build human-AI collaborative governance, strengthen security systems, and advance ecological management.

✦ AI + Global Cooperation

Promote inclusive sharing and co-create global governance frameworks.

1.3 Scaling Developer Power

China's vast talent pool and vibrant open-source ecosystem are fueling rapid AI development. Developers are not only implementers of technology but also a primary source of innovation. From large developer communities to millions of open-source projects and a booming number of AI startups, a complete and dynamic AI innovation ecosystem has emerged, accelerating the deep application and iterative innovation of AI across industries in China.

Developers

Developers: Over 9.4 million software developers in China by the end of 2024.

9.4 million

Projects

Over 30 million open-source projects.

30 million

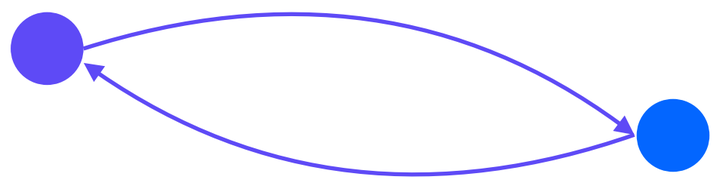
Companies

346,000 AI-related companies registered in the first half of 2025.

346K

Industry Coverage

Spanning the entire AI value chain, from chip design to applications.



1.4 Shifting Development Paradigms

AI is reshaping the development paradigm. Programming assistants can automate routine tasks, which not only significantly improves efficiency and code quality but also frees developers from repetitive work, allowing them to focus on architecture design, complex problem-solving, and technological innovation.

The AI-driven development paradigm is evolving from traditional coding to intelligent, automated, and intent-driven workflows, enhancing both productivity and innovation, and ushering software engineering into a new era of intelligence.

Redefining Developer Roles

✦ New Human-AI Division of Labor

AI handles repetitive coding tasks, while developers focus on higher-value work.

✦ New Skill Requirements

Core competencies shift from syntax mastery to prompt engineering, system design, and evaluation of AI outputs.

✦ Democratization of Programming

AI lowers technical barriers, enabling non-specialists to customize functionality through simple instructions.

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Intent-Driven & Full-Stack Intelligent Development Paradigm

Intent-Driven Development

——The core development model shifts from "writing code" to "expressing intent in natural language", with AI automatically generating and optimizing code — realizing a "wish-based" development experience.

Full-Stack Intelligence

——AI is deeply integrated across the entire development lifecycle, from programming and testing to deployment and intelligent operations.

Evolution of the Development Process

Traditional Development Process		AI-Driven Development Process
Core task: Define product functions & scope Pain point: Heavy info collection & doc workload	Requirement Analysis	Analyze market data Generate user stories, Evaluate technical feasibility
Core task: Design technical architecture and implementation Pain point: Complex tech stack & architecture decisions	System Design & Architecture	Recommend frameworks and architectures, Auto-generate boilerplate docs, Configurations
Core task: Write and optimize code Pain point: API learning costs, data format conversion, and environment setup	Coding & Implementation	Assist API usage, Data conversion, Auto-generate and refactor code, Support "glue code" creation
Core task: Ensure software quality Pain point: Debugging, log analysis, repetitive testing	Testing & Quality Assurance	Analyze logs, Locate bugs, generate mock data, Auto-insert try-catch and test code
Core task: Deliver software Pain point: Manual scripts, release errors, troubleshooting	Deployment & Release	Auto-generate CI/CD scripts, Detect deployment issues, Produce release notes
Core task: Ensure service stability Pain point: High monitoring cost, fragmented feedback	Operations & Monitoring	Predict anomalies, Summarize feedback, Generate insight reports

Open-Source Ecosystem as the New Foundation

A key catalyst in this shift of development paradigms is the unprecedentedly thriving open-source model ecosystem. Unlike relatively closed API-based approaches, open-source models provide maximum freedom and control. In China, high-quality open-source large models are emerging rapidly.

Community Highlights (ModelScope Data):

120,000+ open-source models

5,500+ MCP services and debugging tools

800+ contributing organizations

✦ High Flexibility & Control

Developers can deploy models privately to ensure data security and privacy, or fine-tune them for specific business scenarios.

✦ Cost Efficiency

Development based on open-source models reduces reliance on external APIs, offering more cost-effective and sustainable technical solutions.

✦ Accelerated Innovation

The vast open-source community provides rich toolchains, applications, and solutions, lowering the innovation barrier and speeding up AI adoption across industries.

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In the future, calling AI model APIs will be as convenient and ubiquitous as using electricity. This will significantly lower technical barriers, enabling independent developers and even non-technical roles — to rapidly build prototypes and validate market demand using AI.

Developer Perspective

Chapter 2

Evolution & Leadership

— Portrait of AI-Era Developers

In the AI era, the identity of a developer is evolving.

No longer just coders, they are core drivers of innovation and product creation, shaping the future of technology.

This chapter presents a multidimensional view of this community:

- Demographics and professional profiles.
- Motivations and mindsets, from enthusiasm for AI-era opportunities to the focus on delivering real business value.

As AI becomes deeply embedded in workflows, a more autonomous, versatile, and commercially empowered "super developer" cohort is emerging, redefining the boundaries of technical talent.

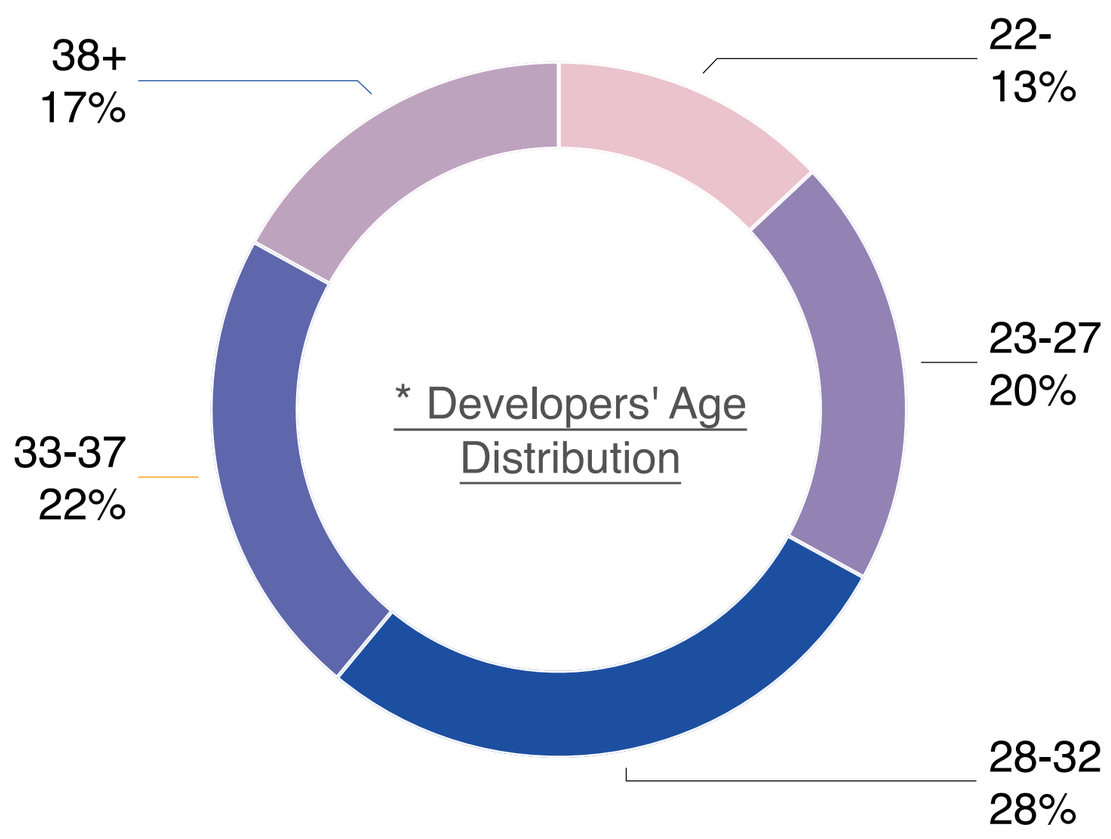
2.1 The Who: Profiling AI Developers

In today's global AI wave, developers are trailblazers driving technological advancement. Who exactly are these key players shaping the future? By analyzing developers' age, gender, education, industry, and organizational roles, we aim to reveal the true profile of AI-era developers.

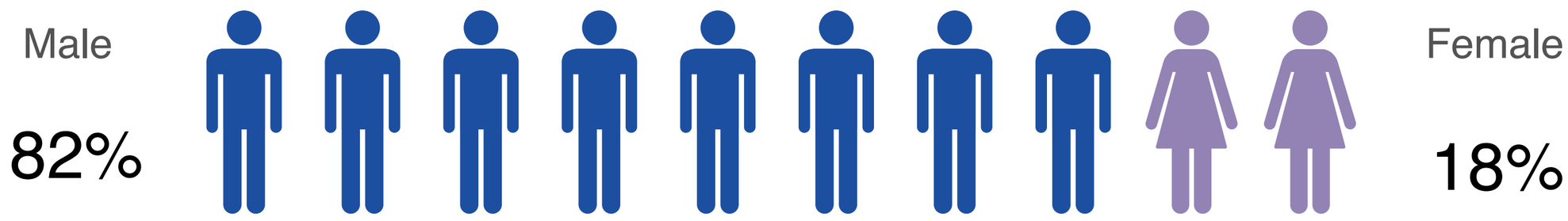
AI-Era Developers: A Balance of Experience and Vitality

Data shows that developers aged 28–32 form the backbone of the community, while those 33–37 also represent a significant 22%. Younger developers (23–27) account for 20%.

This indicates that the AI-era developer cohort combines experience and energy:
Young developers bring innovation and agility.
Senior practitioners contribute deep engineering intuition and systemic thinking, essential for navigating AI's complexity.



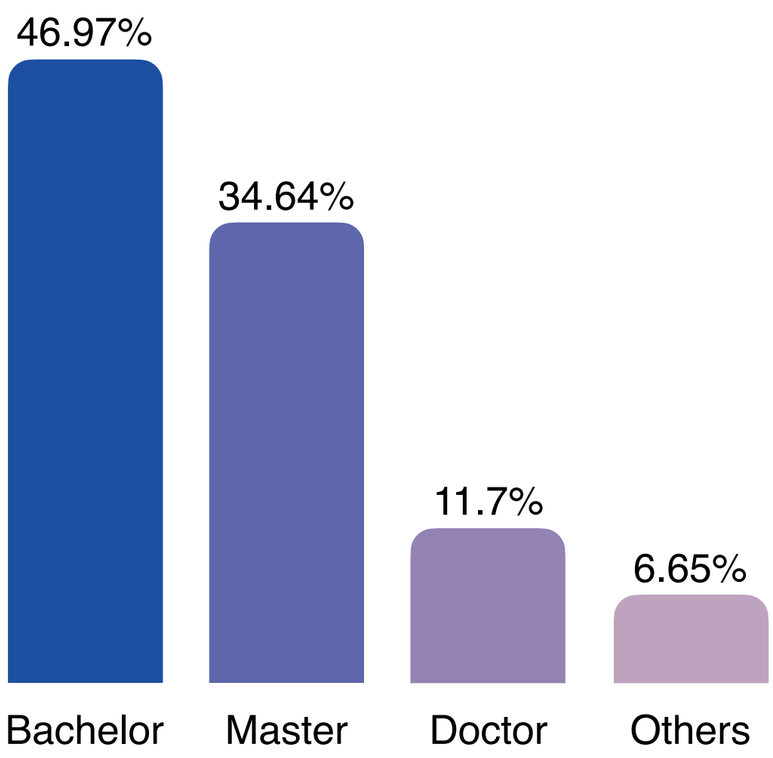
Gender Distribution



Education and Industry Background: Concentration of High-Quality Talent

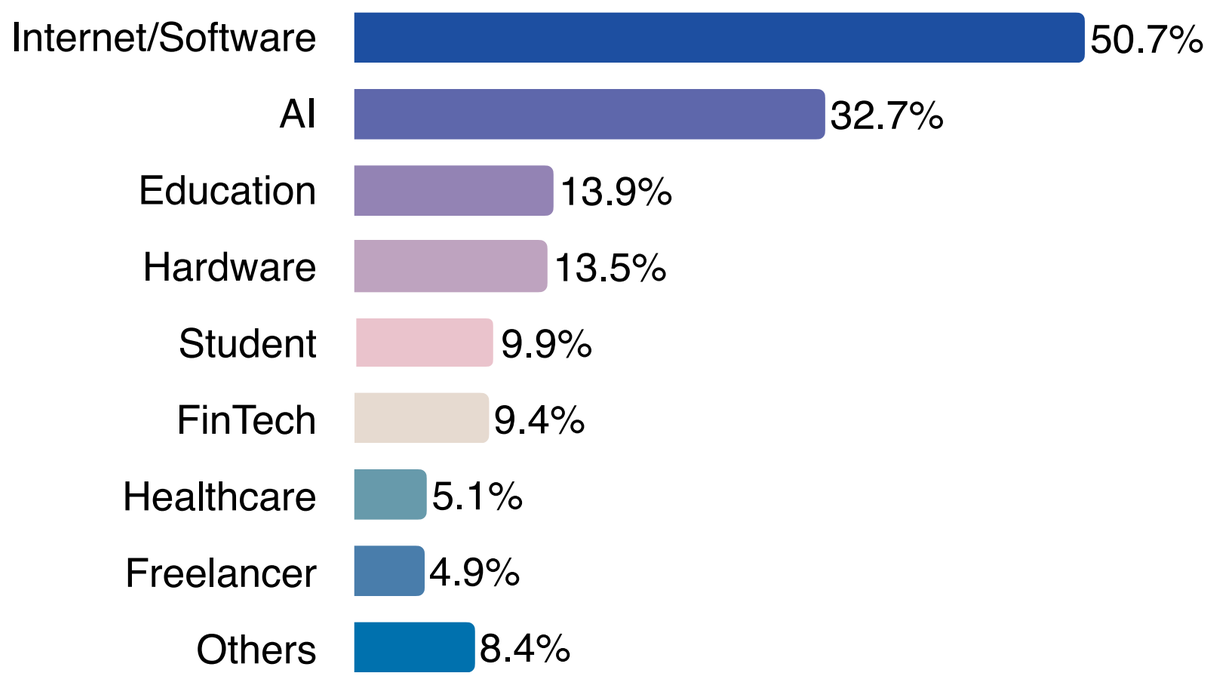
The AI-era developer community is highly educated: 93.35% hold a bachelor's degree or higher, with nearly half possessing a master or doctoral degree, highlighting their strong theoretical foundation and research-oriented mindset.
In terms of industry distribution, talent is heavily concentrated in core technology sectors, with 50.7% in Internet/Software and 32.7% in AI-related industries.
A notable presence also exists in tech-intensive cross-sector areas such as fintech and education, reflecting AI's accelerated penetration across industries.

** Education Background*



** Industry Distribution*

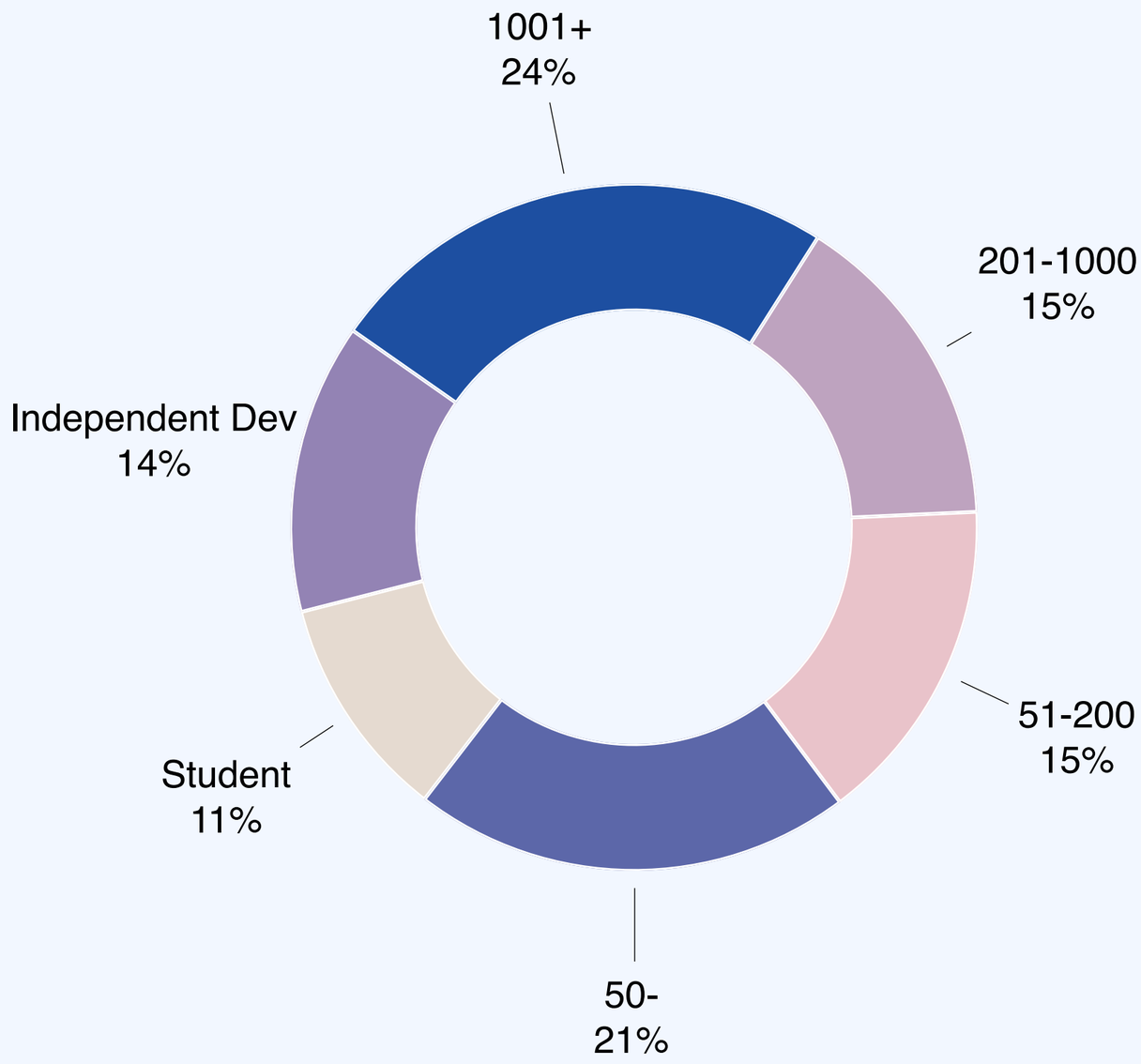
As devs may have overlapping roles, multiple selections are allowed.



Organizational Scale: Big Tech Leads, Independent Developers Rising

Developers in large enterprises (>1,000 employees) constitute 24.27% of the sample. Small organizations (<50 employees) account for 20.74%, while independent developers make up 13.7%.

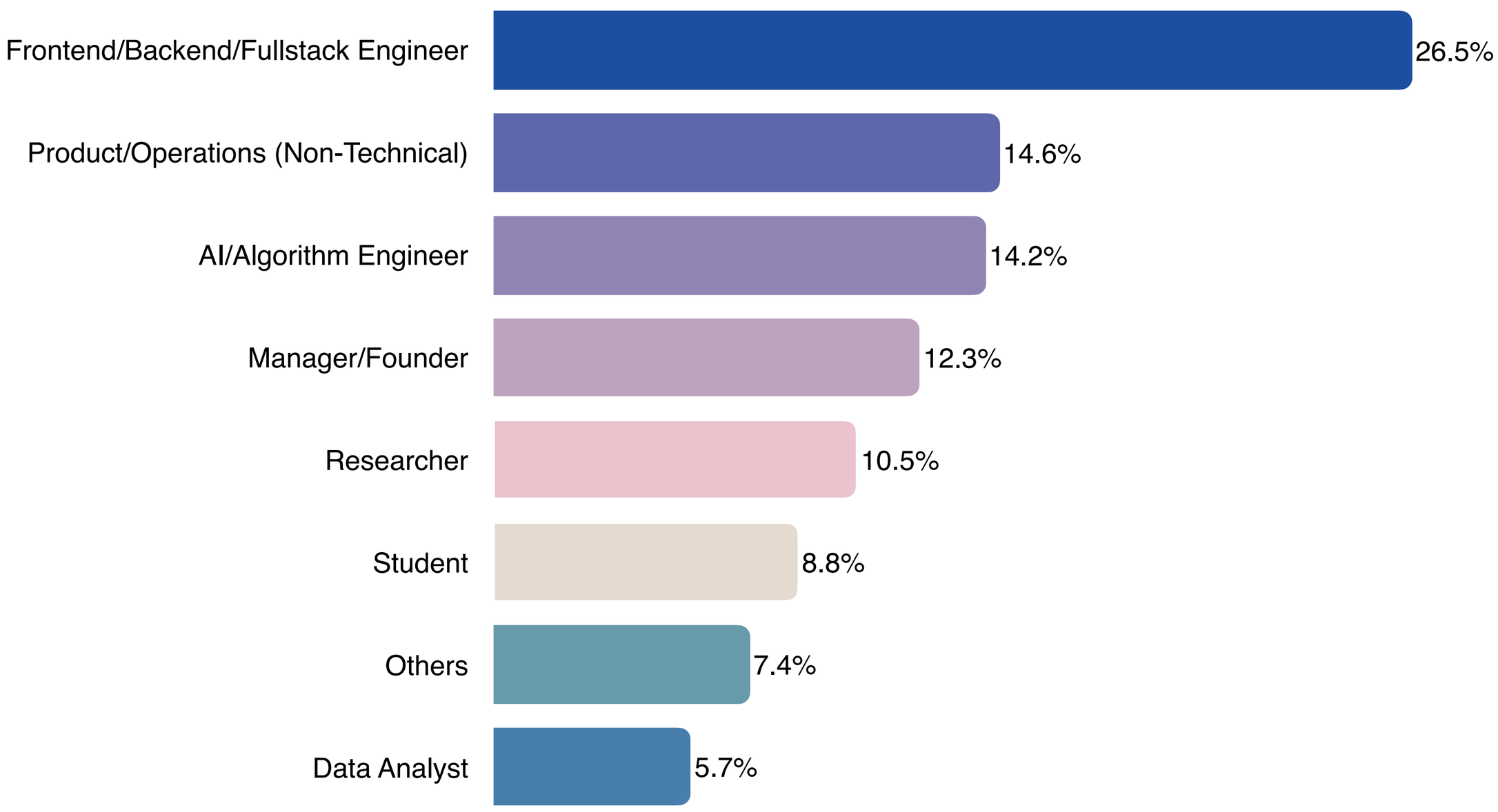
This confirms a global trend: increasingly powerful AI tools and cloud platforms are democratizing technology, enabling small teams and individuals to develop complex AI applications.



Beyond Code: Roles and Responsibilities

Our research indicates that viewing developers solely as coders is overly narrow. The AI-era developer ecosystem is highly diverse and multi-dimensional:

** Developer Role Distribution*



Front-end/Back-end/Full-stack engineers form the largest single group (26.51%). Notably, non-technical roles such as product and operations account for 14.62% — a growing core segment of AI developers who may not write code directly but leverage AI programming tools to support their work, broadening the definition of "developer" in the AI era.

Other key roles include AI/algorithm engineers (14.23%), managers/founders (12.28%), and researchers pushing technological boundaries (10.53%).

This diversity confirms that AI-era developers are not just code creators, but also technology strategists, product definers, and frontier researchers. From different perspectives and backgrounds, they collectively embrace the opportunities and challenges brought by AI.

2.2 Motives, Mindset and Challenges

To better understand them, we explore the intrinsic drivers that motivate them and the core challenges they face. Research shows that AI-era developers are driven by passion for technology and seizing timely opportunities, with a central concern of turning potential into real business value — a cohort motivated by impact rather than income.

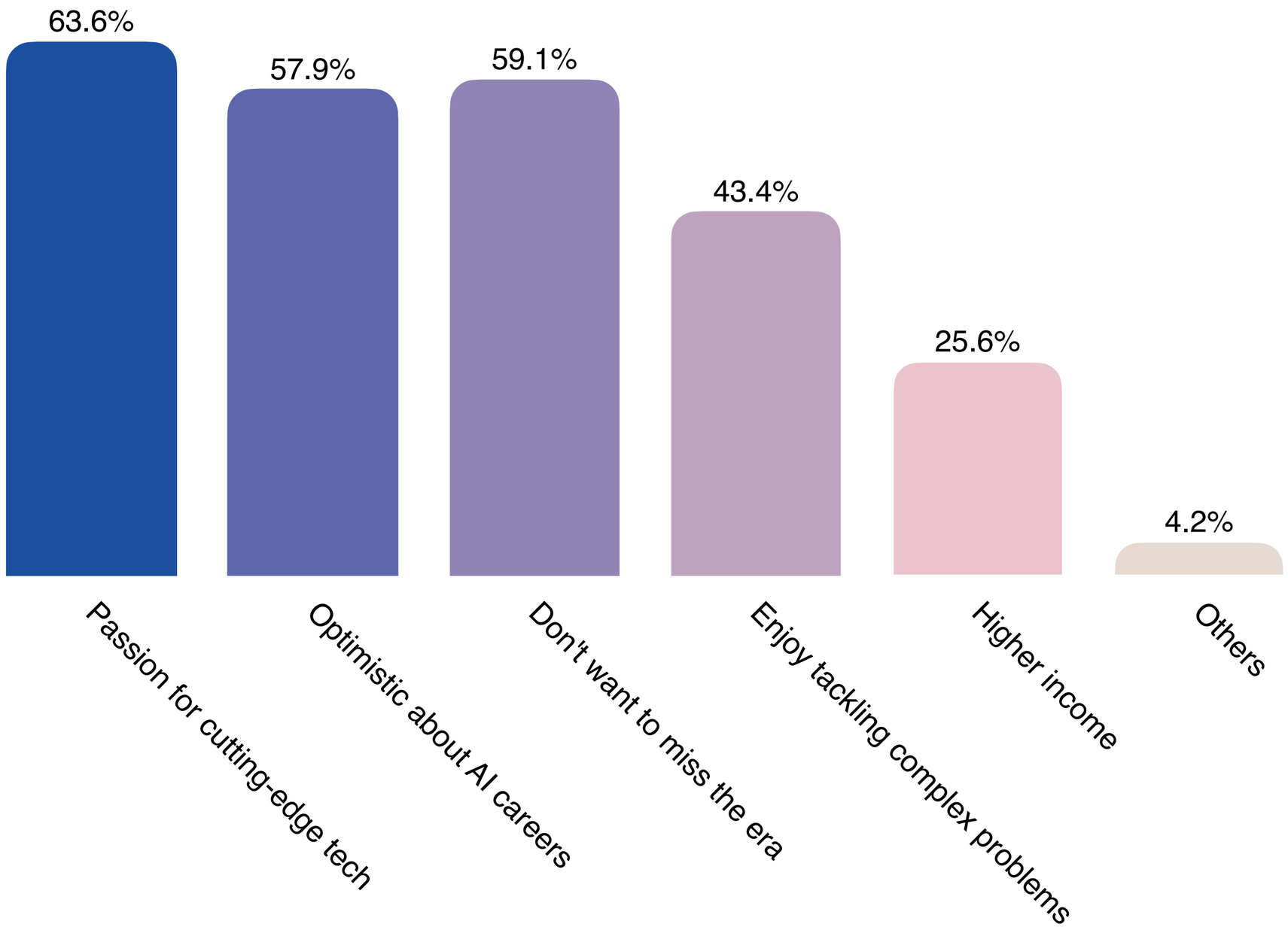
Intrinsic Drive and Opportunity in the AI Era

When examining why developers enter the AI field, intrinsic and strategic motivations far outweigh external incentives. The top three reasons are:

1. Passion for cutting-edge technology (63.55%)
2. Seizing a timely opportunity (59.11%)
3. Confidence in AI career prospects (57.88%)

By contrast, financial reward ranks much lower (25.62%), highlighting that these developers seek professional fulfillment and historical impact at a pivotal moment of paradigm shift, not just a job.

** Why Developers Enter the AI Field*

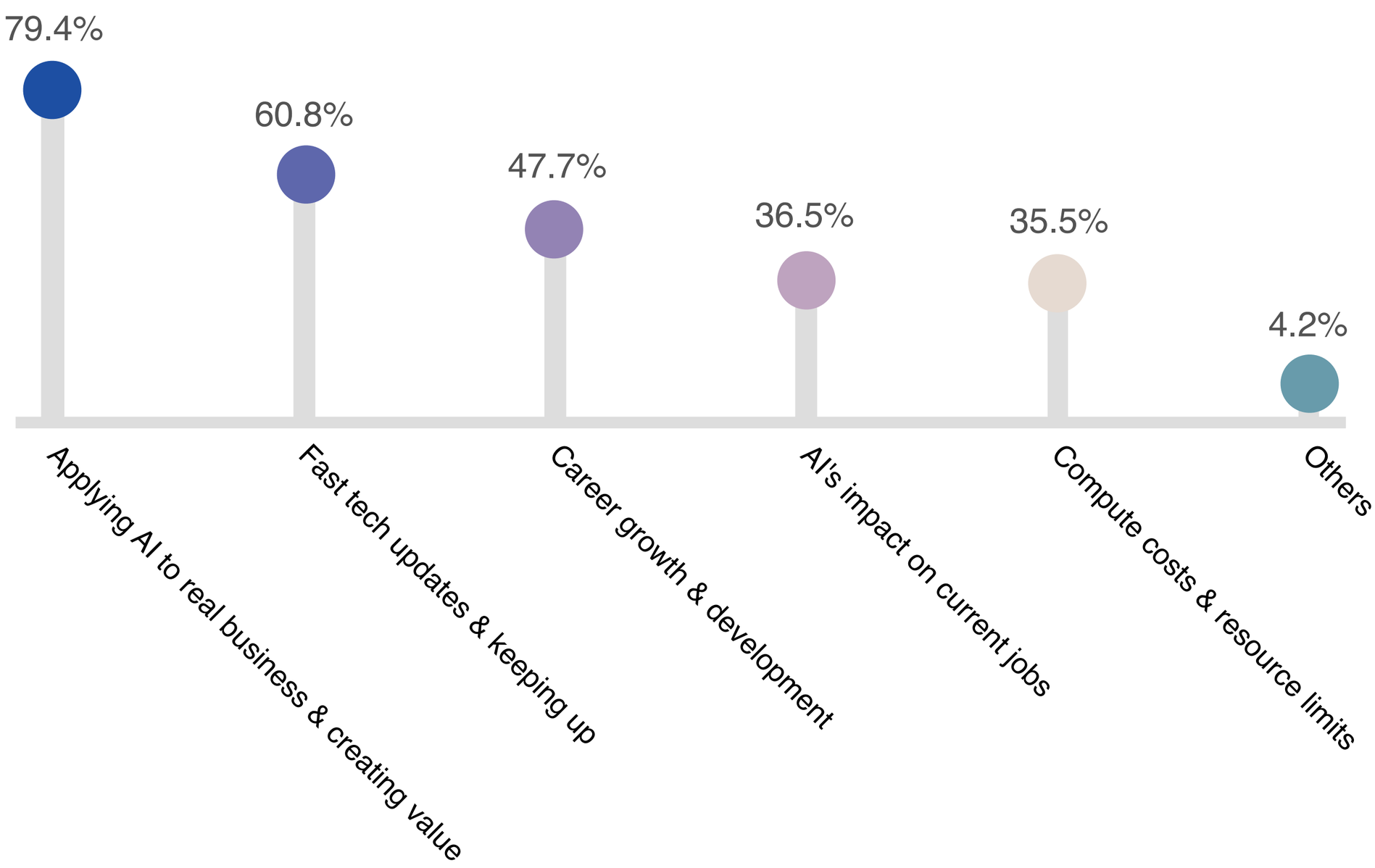


Core Concerns of AI-Era Developers

Alongside strong motivation, developers face significant concerns, primarily around translating AI into real business value — cited by 79.4% of respondents as their top challenge. Close behind is the intellectual challenge of keeping up with rapid technological updates.

Interestingly, the commonly discussed fear of AI replacing jobs ranks lower, chosen by only 36.5% of respondents. This aligns with global developer surveys, showing developers focus more on leveraging AI effectively than on displacement.

** Developers' Core Concerns*



This reflect the astonishing pace of AI development in 2024–2025:

- Large language models expanding context windows from thousands to millions of tokens
- MoE architectures balancing scale and efficiency
- Breakthroughs in multimodal AI, text-to-image, and text-to-video
- A surge of new products and innovations across AI companies

Together, these create a steep learning curve, adding significant intellectual and practical pressure on developers.

2.3 New Tools & Workflows

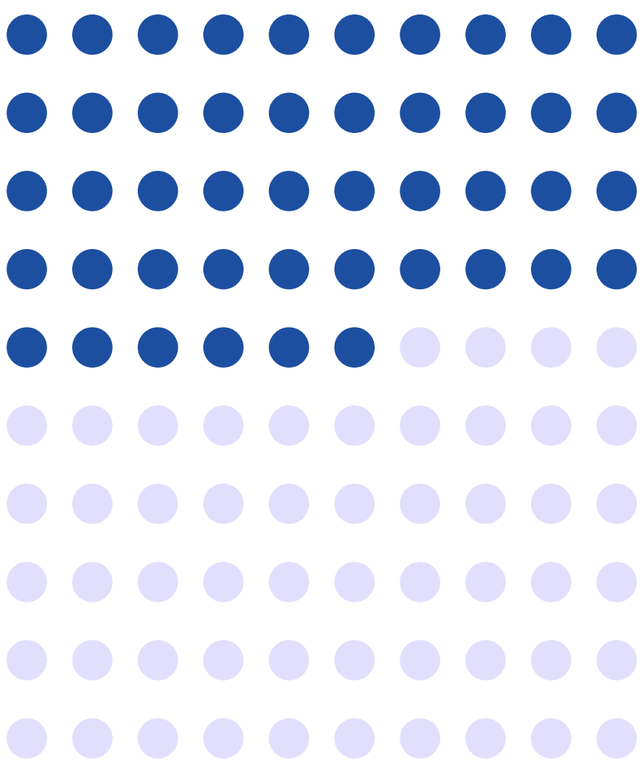
> For AI-era developers, AI is no longer a peripheral tool but a core part of daily workflows, reshaping tech stacks, processes, and roles.

Deep Integration

AI has permeated developers' work:

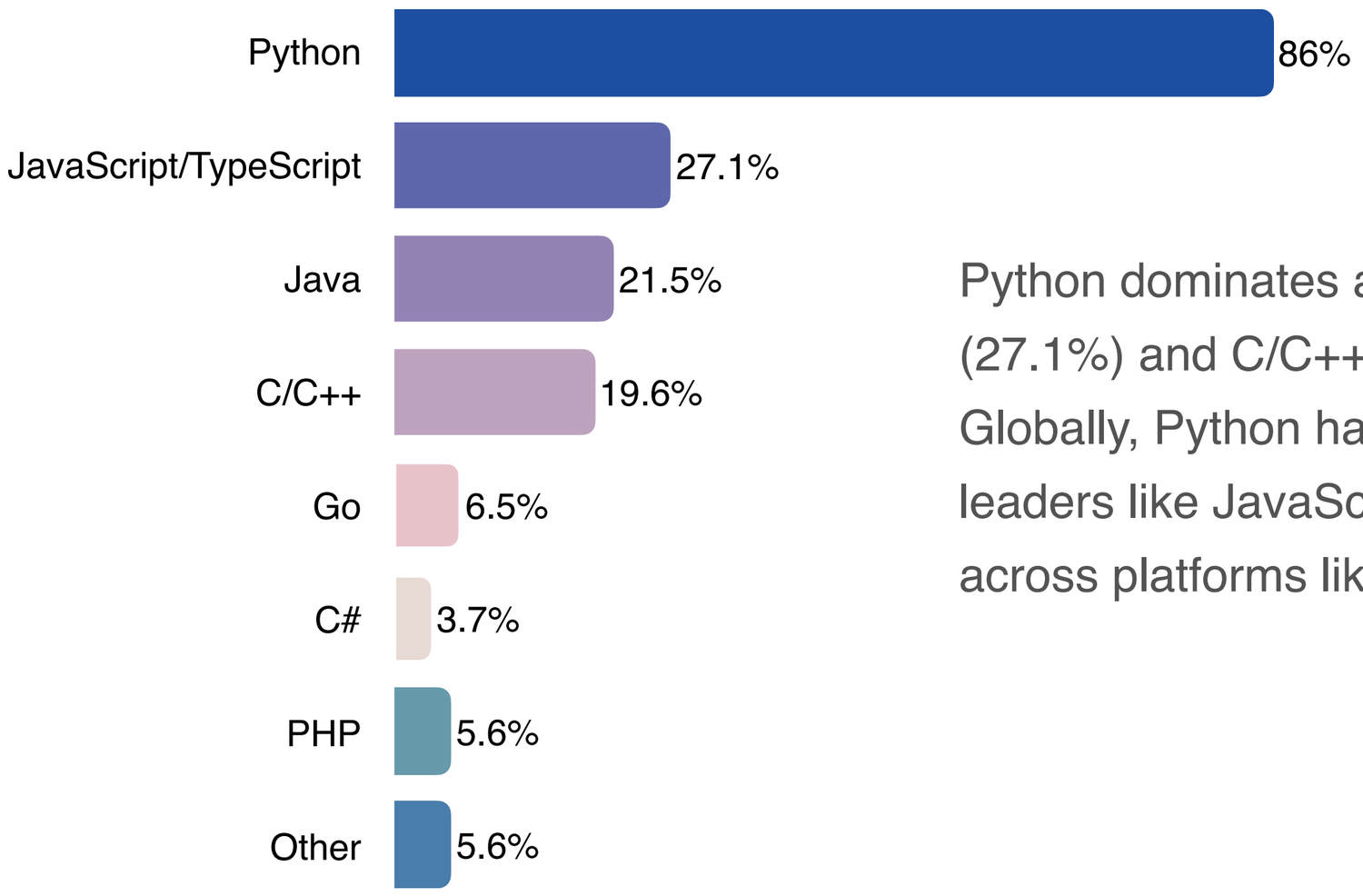
45.6% report that "almost all" or "most" of their tasks are directly AI-related

27.9% use AI in some of their work. Notably, no respondents report that AI is "rarely" involved



This level of integration aligns with global trends, indicating that AI literacy is now essential, not optional.

** Most Used Programming Languages*



Python dominates at 86%, far ahead of Java (27.1%) and C/C++ (19.63%)
Globally, Python has overtaken long-time leaders like JavaScript, driven by AI adoption across platforms like GitHub

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Bridging the Gap: How AI Reshapes Developer Boundaries and Collaboration

Developers:

Technical professionals with solid programming skills who write code independently.

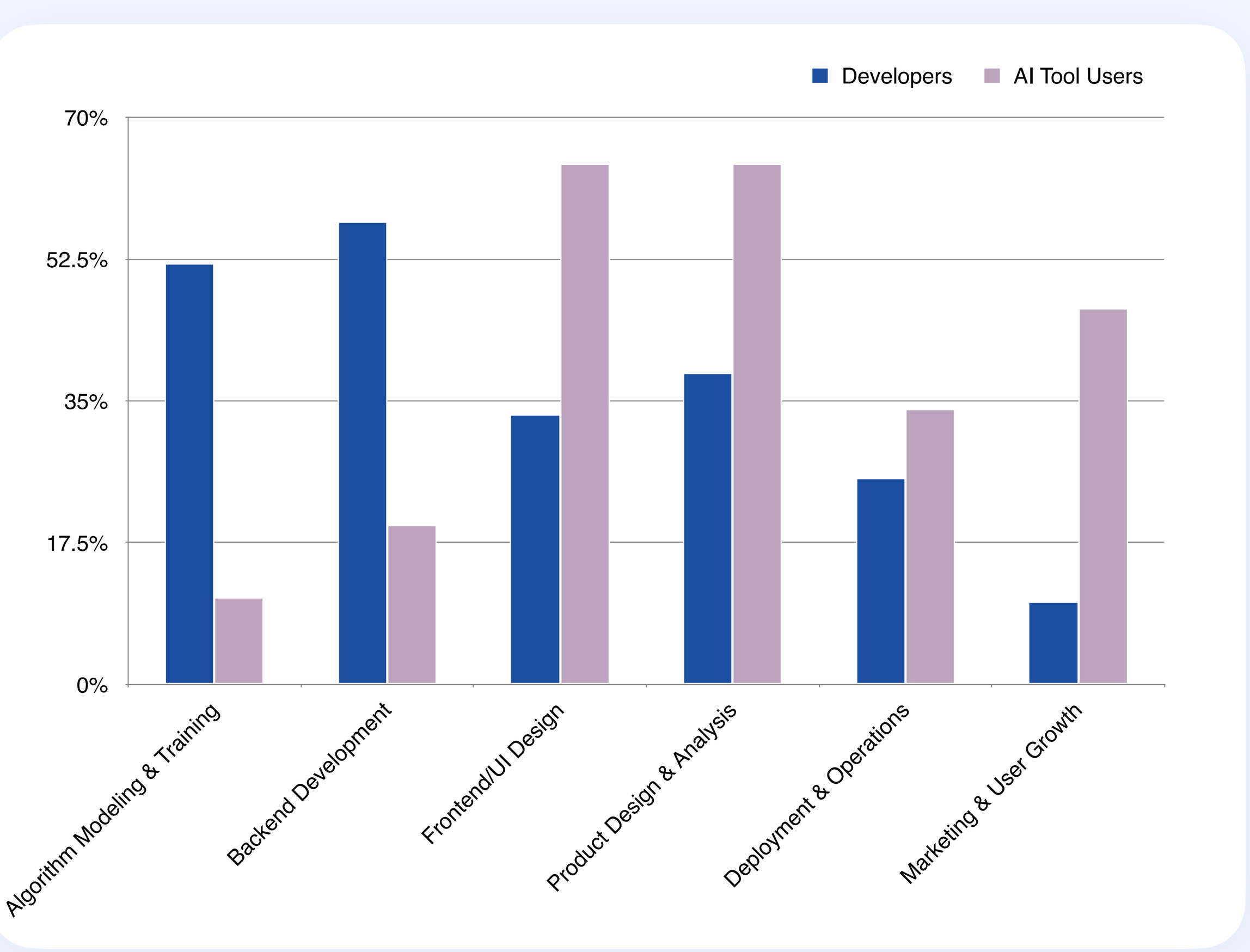
AI Tool Users:

Non-traditional tech roles proficient in AI-native tools like CursorAI for code generation.

Our research shows that these groups focus on different aspects of work:

- Developers, as the core technical group, remain focused on algorithm modeling, backend development, and foundational technology.
- AI tool users concentrate on the application layer, leveraging AI in frontend/UI design, product requirements analysis, and even marketing — directly impacting users and markets.

By accelerating the journey from concept to market, AI is reshaping software development roles and empowering a broader range of professionals.



2.4 Rise of "Super Developers"

> AI is reshaping not just workflows but also developer identity and career paths. The traditional picture of developers as full-time employees in large companies is giving way to a more diverse, dynamic, and autonomous group. Independent developers, part-time entrepreneurs, and interdisciplinary professionals are emerging, signaling a fundamental shift in the developer ecosystem.

Birth of the "Super Developer"

Lowered AI barriers enable professionals with deep domain expertise — such as product managers, researchers, financial analysts, designers, and doctors — to cross over into AI development. Using AI tools, they translate domain knowledge into innovative applications, evolving from AI users to creators.

Developer Case Study

"I no longer need to draw prototypes or write extensive docs. With a ready-to-use AI tool, I can quickly align with my team and clients."

Background: AI Product Manager at an Internet company, proficient in Python, previously limited by inability to independently handle frontend development.

Core Change: AI coding tools like Cursor enable him to build a functional demo in two days, faster than traditional prototyping.

Capability Boundary: AI enables demo-level products, while engineering-level stability still needs software architecture, data security, and operations knowledge.

Summary: AI acts as a powerful capability multiplier, allowing cross-domain talent to overcome skill bottlenecks. One individual can now drive product conception, development validation, and market communication, exemplifying the rise of super developers who can independently take a product from 0 to 1.

Birth of "Super Developers"

For skilled developers, AI fills gaps in frontend, design, or new programming languages. They can delegate over 70% of coding tasks to AI, focusing on reviewing quality and guiding core logic. This empowerment allows one person to handle multiple roles, completing the full product lifecycle, from development to promotion and launch.

Developer Case Study

"Without AI, I wouldn't have attempted independent development — the cost-benefit was too low. But AI lets a single individual achieve a lot."

Background: Former Tesla backend (Go) developer; became an independent developer in mid-2024. Has launched four apps, including LaxtTime (daily check-in) and Life Widget (timer), all well received.

Core Change: AI tools (e.g., GPT-4, Claude) enabled him to delegate 100% of coding. He provides ideas and logic, while AI generates the code. In unfamiliar languages (Swift), he develops products through interactive AI guidance. For UI, AI handles design generation and color schemes, bypassing his weaker areas.

Capability Boundary: AI enables "good enough" products, but standout results require developer refinement. Users must have the ability to review AI-generated code, or projects risk being unstable.

Summary: AI greatly extends individual capability, enabling independent developers to become well-rounded professionals across development, design, user acquisition, and conversion.

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AI Turns Development into Creation, Not Labor.

In the AI era, those who know how to ask questions go further than those who just know how to search."

Developer Perspective

Chapter 3

Cognitive Flywheel — From Learners to Co-Creators

In an era where AI iterates on a weekly—or even daily—basis, no individual can keep pace with the explosion of knowledge alone. This creates unprecedented cognitive challenges for developers.

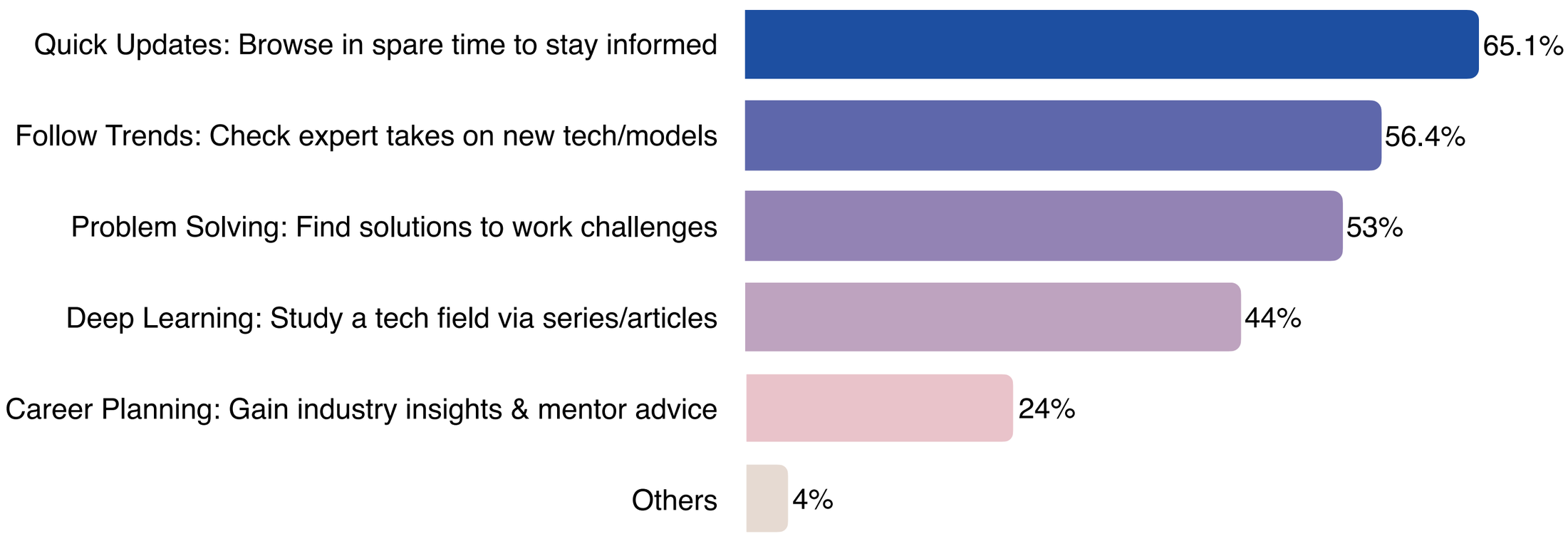
As highlighted in Chapter 2, many developers feel the pressure of "keeping up with rapidly evolving technology."

In response, AI-era developers are moving beyond traditional, one-way learning. They are building dynamic, self-reinforcing cognitive systems that enhance learning efficiency and knowledge retention.

This chapter draws on deep surveys, interviews, and Zhihu AI discussion data to analyze how developers structure their learning. We reveal how they leverage high-quality communities and collective intelligence, transforming from knowledge consumers into creators, and maintain a competitive edge in this fast-evolving field.

3.1 Information Access & Bias

For AI-era developers, the core drivers of information acquisition are "timeliness" and "practicality." Surveys show that over 60% regularly consume information in fragmented moments to stay updated. Equally important are professional analyses of new technologies/models and solutions to real work challenges, both cited by more than half of respondents.



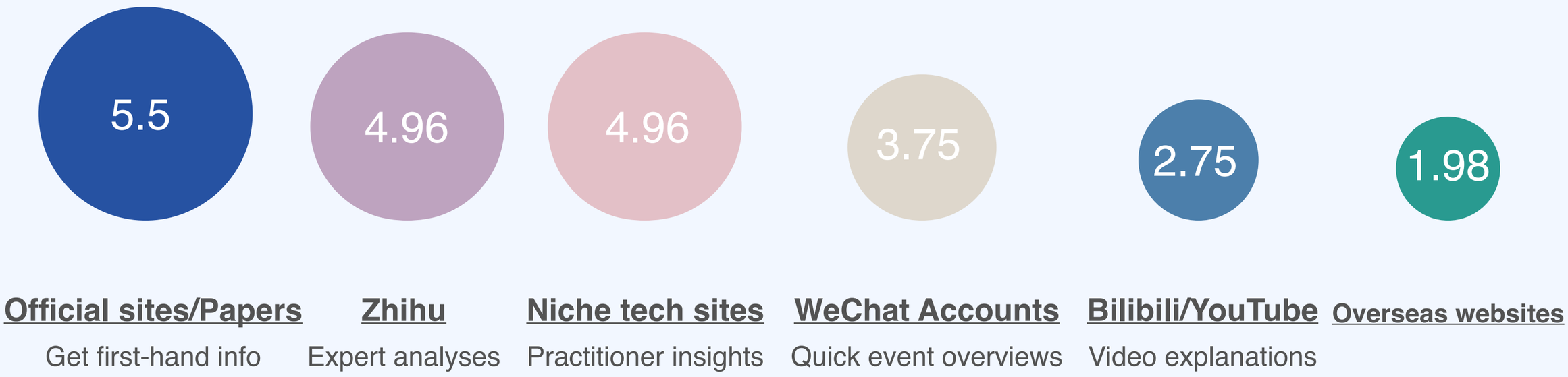
Information Acquisition Pathways

When encountering a new technology trend, developers' information-seeking is not a single, isolated action, but a continuous "cognition → understanding → application" chain. We identify four key stages, highlighting the behaviors, core needs, and primary information sources developers rely on at each step.

Stage	Awareness	Exploration	Understanding	Application
User Behavior	Encounter news or discussions	Search or visit official sources	Read analyses, watch deep-dive videos	Join discussions, share takeaways
Core Question	"What happened?"	"What's the official view?"	"How to interpret?"	"How to apply?"
Main Channels	WeChat Official Accounts, Moments, etc.	Official websites, original papers	Zhihu, vertical tech communities	ModelScope, tech forums, Zhihu

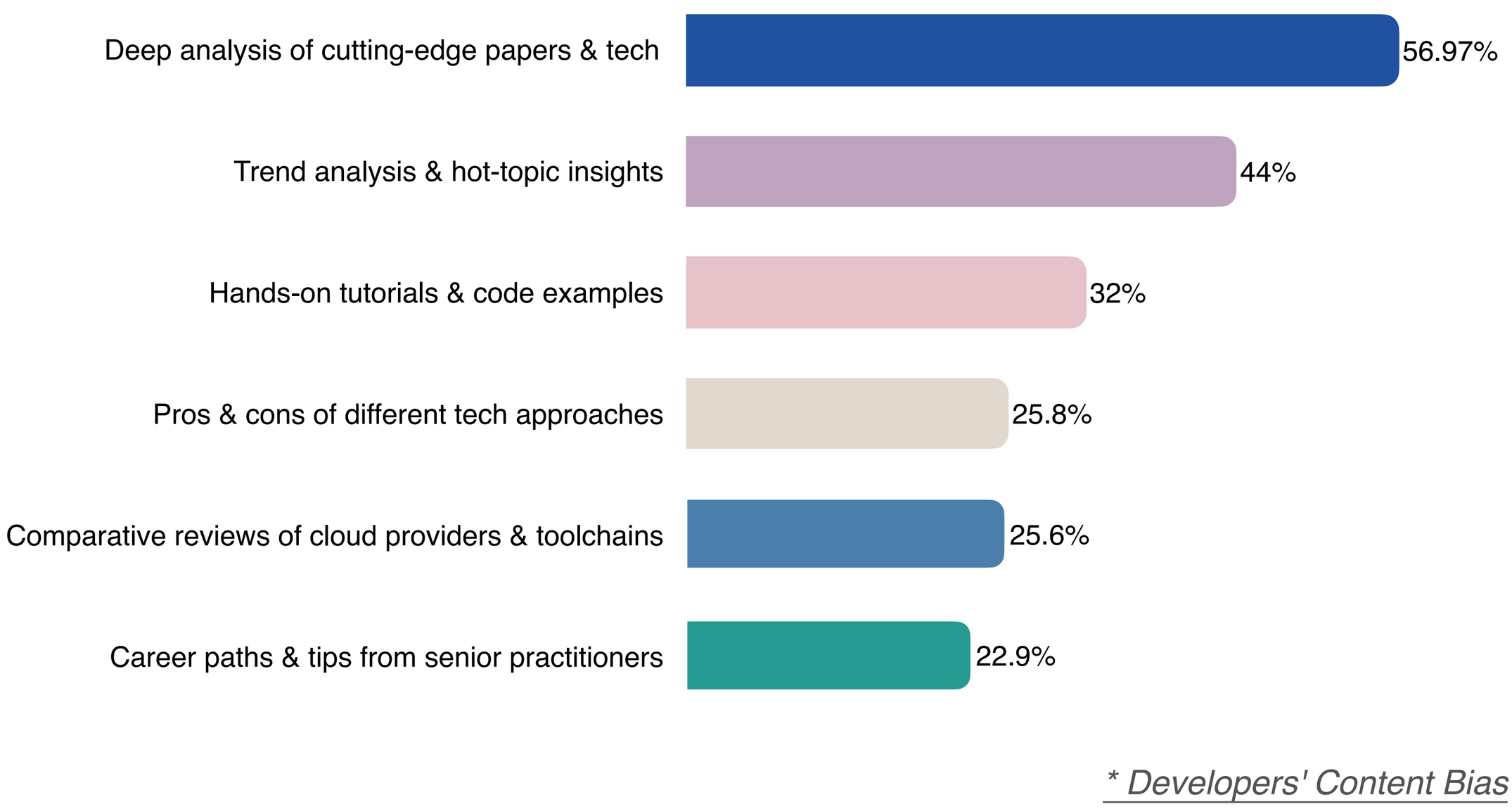
Developers Enhancing Cognition: Starting from Primary Sources

When major AI events occur such as a new model release, developers prioritize information fidelity. Surveys show that official websites and original papers are their top sources for professional AI insights, scoring 5.5 on average. Directly consulting papers and official documentation is the most reliable way to avoid distortion or delay in information. Secondary sources include specialized tech websites for practitioner analyses and Zhihu, where experts provide in-depth breakdowns.



Content Preferences: Depth and Professionalism

92% of developers value content that is deep, technical, and practical



** Developers' Content Bias*

3.2 Community for Technical Growth

Zhihu's core value lies in its diverse AI and tech developer ecosystem, spanning students from top universities, frontline engineers at tech giants, leading academics, and startup founders. This diversity creates a dynamic network for knowledge creation and collective validation.

Zhihu's Tech & AI Ecosystem

16M

continuous learners

users participating in tech and AI discussions

3.56M

in-depth contributors

creators publishing long-form content under tech/AI topics

150K

ecosystem connectors

certified experts, scholars, or industry professionals in tech/AI

Developer Behavior on Zhihu

✦ Beginners' learning and Q&A

Early and mid-level developers post practical questions, e.g.:

Which AI coding tool is currently the strongest ?

With AI coding IDEs, why still use CLI ?

How much of your recent code was generated by AI ?

In your workflow, which stages involve AI ?

✦ Advanced practitioners' knowledge exchange

Upon new model or paper releases, developers immediately post questions. Experts from diverse backgrounds provide detailed analyses. Over the past year, more practitioners "answer personally," while responses from model development teams emerge as authoritative references, sparking further discussion.

知乎 × ModelScope 魔搭社区

Zhihu's AI Industry Content Ecosystem

When tens of thousands of developers operate their cognitive flywheels on the same platform, the collective intelligence generated far exceeds individual learning. Zhihu has thus become a trend indicator and essential infra for the AI industry. Breakthrough models, cutting-edge papers, and in-depth technical discussions often first surface on Zhihu, forming a rich knowledge repository.

✦ Technical Deep Dives

"What fundamentally differentiates AI hallucinations from human errors?"
"What are the differences between MCP and function calling? How do they relate to AI Agents?"
"What are your predictions for the next-generation Transformer architectures?"

✦ Product Innovation & Applications

"Alibaba's Qwen3 series models released: what are the technical highlights?"
"How to evaluate China's general-purpose AI Agent Manus? Could it be the next big hit?"
"Evaluation of DeepSeek's R1 vs. R1-Zero models?"

✦ Industry Trends & Hot Topics

"Roundtable: Has the AI Agent era begun?"
"AI reshaping industries: which sectors will emerge as leaders?"
"Is AI the Fourth Industrial Revolution?"

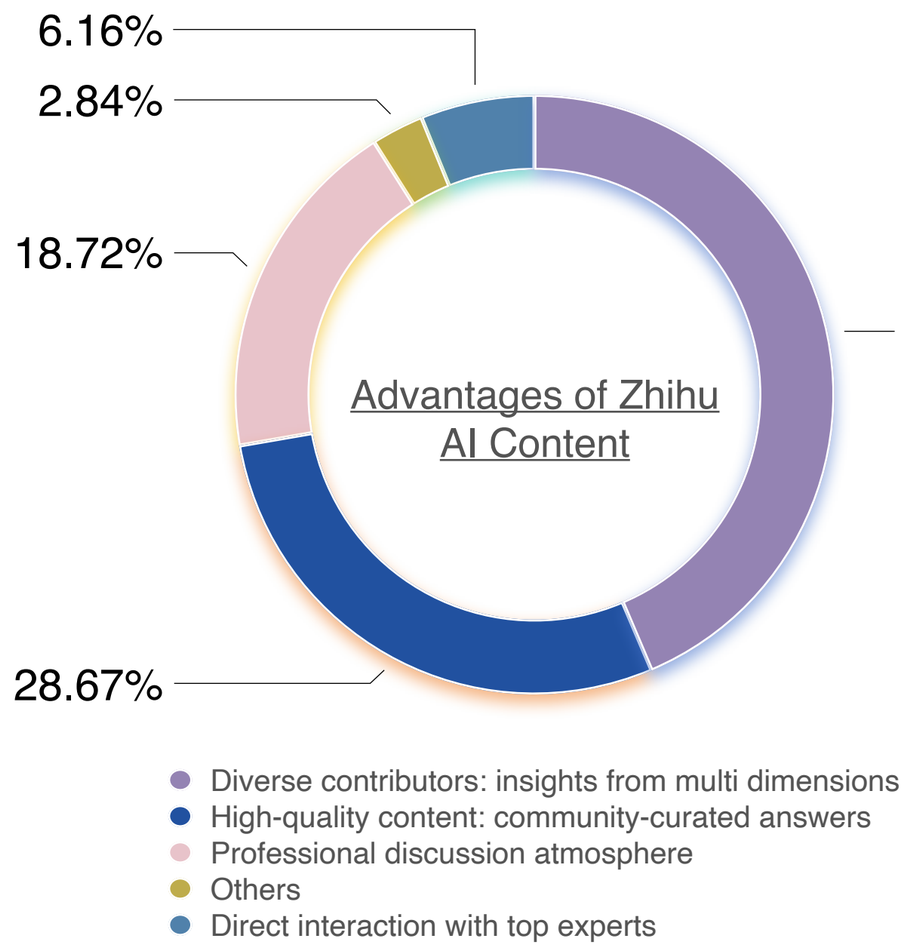
✦ Career Development & Personal Growth

"Getting started with deep learning?"
"Roundtable: AI and career choices"
"Which deep learning paper's idea impressed you the most?"

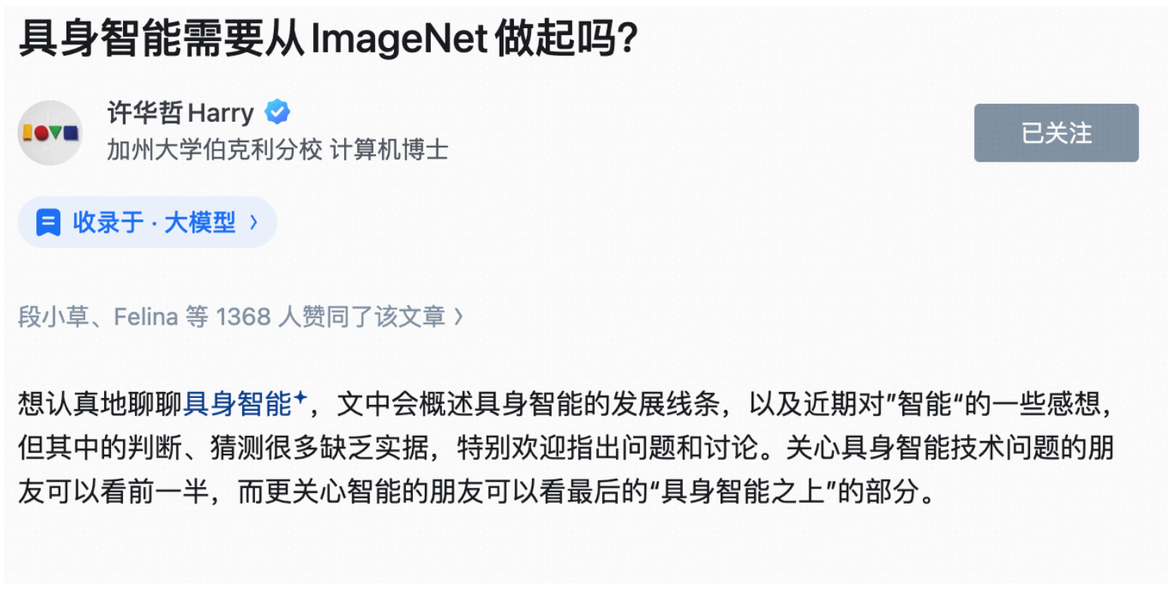
Developers Enhance Cognition on Zhihu Through Diverse Perspectives

Developers see Zhihu as an "engine of collective intelligence." When facing new or complex models or technologies, they leverage diverse expert perspectives and high-quality Q&A to build understanding.

43.6% of developers highlight Zhihu's diverse contributor identities —academic, industrial, and research perspectives—as its key advantage.



Zhihu's Multi-Dimensional Value Example of Embodied AI Topic


具身智能需要从ImageNet做起吗?

许华哲 Harry
加州大学伯克利分校 计算机博士

已关注

收录于 · 大模型 ›

段小草、Felina 等 1368 人赞同了该文章 ›

想认真地聊聊具身智能，文中会概述具身智能的发展线条，以及近期对"智能"的一些感想，但其中的判断、猜测很多缺乏实据，特别欢迎指出问题和讨论。关心具身智能技术问题的朋友可以看前一半，而更关心智能的朋友可以看最后的"具身智能之上"的部分。

Frontier "Academic & Research" Perspective

- Focuses on future possibilities and theoretical boundaries.
- Discusses questions like potential failure paths, sensor needs, and reinforcement learning challenges.
- Offers a forward-looking map for the field.


具身智能：一场需要谦逊与耐心的科学远征

周指导 BoyuZhou
机器人 南方科大 博导 robotics-star.com

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收录于 · 大模型与具身智能 ›

Felina、知乎科技 等 1449 人赞同了该文章 ›

在知乎平台潜水多时，暗中观察了具身智能从概念萌芽到技术热潮的演进。在实验室搬砖干活、带研究生之余，梳理了关于具身智能的若干思考，期冀与业界同仁展开深入探讨。

首先要肯定的是，具身智能确实为机器人领域注入了新的研究活力，有望突破机器人的性能上限。具身领域涌现出众多令人钦佩的青年学者，这里就不一一respect了。

Practical "Industry & Research" Perspective

- Focuses on feasibility and practical challenges.
- Emphasizes disciplinary synergy, context-specific solutions, and hands-on problem solving.
- Grounds concepts in engineering practice, industrial application, and long-term strategy.

3.3 From Consumers to Contributors

Zhihu is not just an AI knowledge hub—it witnesses and empowers developers as they evolve from beginners to seasoned contributors.

78%

Developers on Zhihu move from reading and asking questions to answering and publishing articles.

Data above shows they have completed a cognition loop: from input (learning) to output (creation). By producing content, they structure and consolidate knowledge while contributing valuable insights to the community.

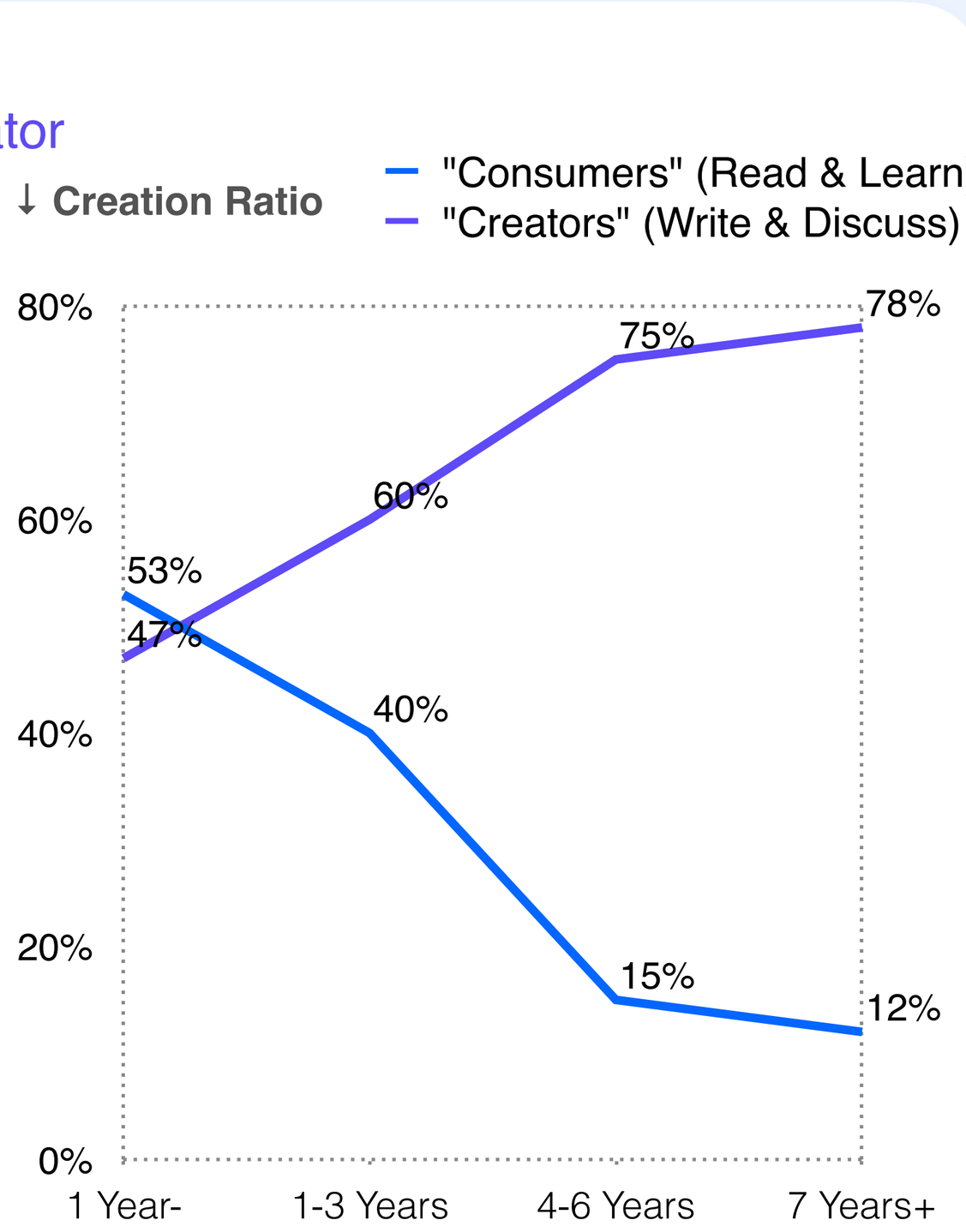
From Content Consumer to Creator

Research shows a strong correlation between Zhihu tenure and activity type:

Content creators (purple line) rise steadily with tenure: 47% for <1 year, 78% for 7+ years.

Content consumers (blue line) decline over time: 53% for <1 year, 12% for 7+ years.

This illustrates the shift from passive learning to active participation, highlighting how Zhihu nurtures developer growth and collective intelligence.



知乎 × ModelScope 魔搭社区

Developers' Typical Growth Path on Zhihu

On Zhihu, a typical developer journey often follows three stages——

Beginner Stage： Students or early-career professionals use Zhihu to ask questions and browse content, solving specific coding problems and building foundational knowledge.

How to self-learn AI?

Should a high school student learn Python for AI?

Top 5 courses for CS students?

Intermediate Stage： As frontline engineers, they follow experts, read long-form answers and articles, and construct their own knowledge framework.

What interesting things have you built with DeepSeek-R1?

"Writing code or prompts"—is this a false dilemma?

Share an AI-assisted development case: how much time was saved?

Advanced Stage： Senior engineers or technical experts shift from learning to contributing, answering questions, updating columns, and building personal influence.

@ConardLi: How to fine-tune DeepSeek-R1 for a specific domain

slime dev @朱小霖: RL Scaling Era—what kind of RL framework is needed?

Huawei researcher @左腾飞: Behind Huawei CloudMatrix384 paper: insights from the author's perspective

Case Study – @夕小瑶

From a student learning ML and NLP on Zhihu to an AI entrepreneur sharing deep technical content:

- 122 professional articles
- 117 high-quality answers
- Authored 1,400-page AI Full-Stack Handbook
- In-depth analysis of AI model evolution (Word2Vec → BERT, RLHF algorithms)

3.4 Super Communities as Connectors

Linking Individual Experience with Collective Wisdom


SIGCOMM Test-of-Time Award 背后的故事

Yibo Zhu

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李博杰 等 434 人赞同了该文章 ›

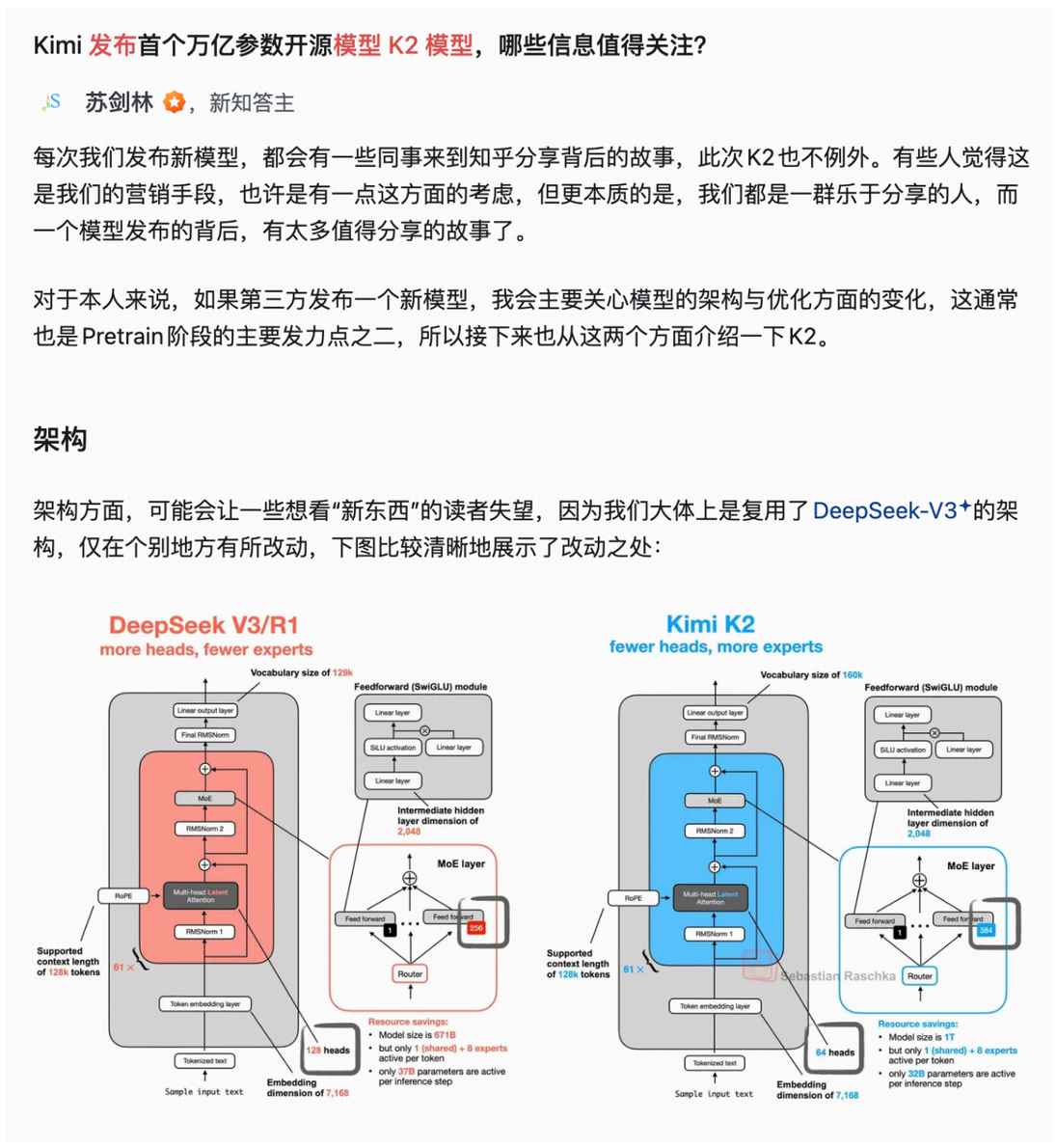
写给在做研究的硕士/博士生

https://mp.weixin.qq.com/s/Lr6JDw0hxgp6QqUO4Fyh6w
mp.weixin.qq.com/s/Lr6JDw0hxgp6QqUO4Fyh6w

13年夏天，我博二结束的那个暑假，我来到了MSR Redmond实习。当时的MSR真是众神云集。我的一号mentor Jitu Padhye现在是OpenAI的网络负责人，二号mentor张铭后来是阿里网络主要奠基人之一，三号mentor郭传雄后来是字节网络一号位，现在在国内继续做网络方向创业。我基本是他们在MSR的关门弟子了。为啥带完我都会离开研究院甚至离开微软，去带兵打仗呢？--这个想法有点自恋，其实原因出在MSR本身。MSR后来相对有点陨落了。

@朱亦博, co-founder of StepFun, shared his journey after winning the SIGCOMM Test of Time Award for Congestion Control for Large-Scale RDMA Deployments. Advice to students: mentorship, drive, and choice of interest matter far more than institutional prestige or chasing trends.

Connecting the Spirit of Sharing with Ecosystem Growth


Kimi 发布首个万亿参数开源模型 K2 模型，哪些信息值得关注?

苏剑林，新知答主

每次我们发布新模型，都会有一些同事来到知乎分享背后的故事，此次K2也不例外。有些人觉得这是我们的营销手段，也许是有一点这方面的考虑，但更本质的是，我们都是一群乐于分享的人，而一个模型发布的背后，有太多值得分享的故事了。

对于本人来说，如果第三方发布一个新模型，我会主要关心模型的架构与优化方面的变化，这通常也是Pretrain阶段的主要发力点之二，所以接下来也从这两个方面介绍一下K2。

架构

架构方面，可能会让一些想看“新东西”的读者失望，因为我们大体上是复用了DeepSeek-V3+的架构，仅在个别地方有所改动，下图比较清晰地展示了改动之处：

Connecting the Spirit of Sharing with Ecosystem Growth

Mind explorer @苏剑林, aka "Su Shen", documents his research and reflections in the community.

After his team releases a new model, he uses Zhihu to explain the underlying ideas and experiments.

No matter how powerful AI becomes, true creators remain rare. Launching great products still requires clear goals, strong multidisciplinary skills, and the dedication to see them through.

Developer Perspective

Chapter 4

Practice & Creation —Developers as Builders

As AI evolves rapidly, openness and open-source have become pivotal forces driving both technological democratization and breakthrough innovation. China's largest open-source AI community, ModelScope, hosts over 120,000 models and 5,500 MCP services, serving more than 20 million users.

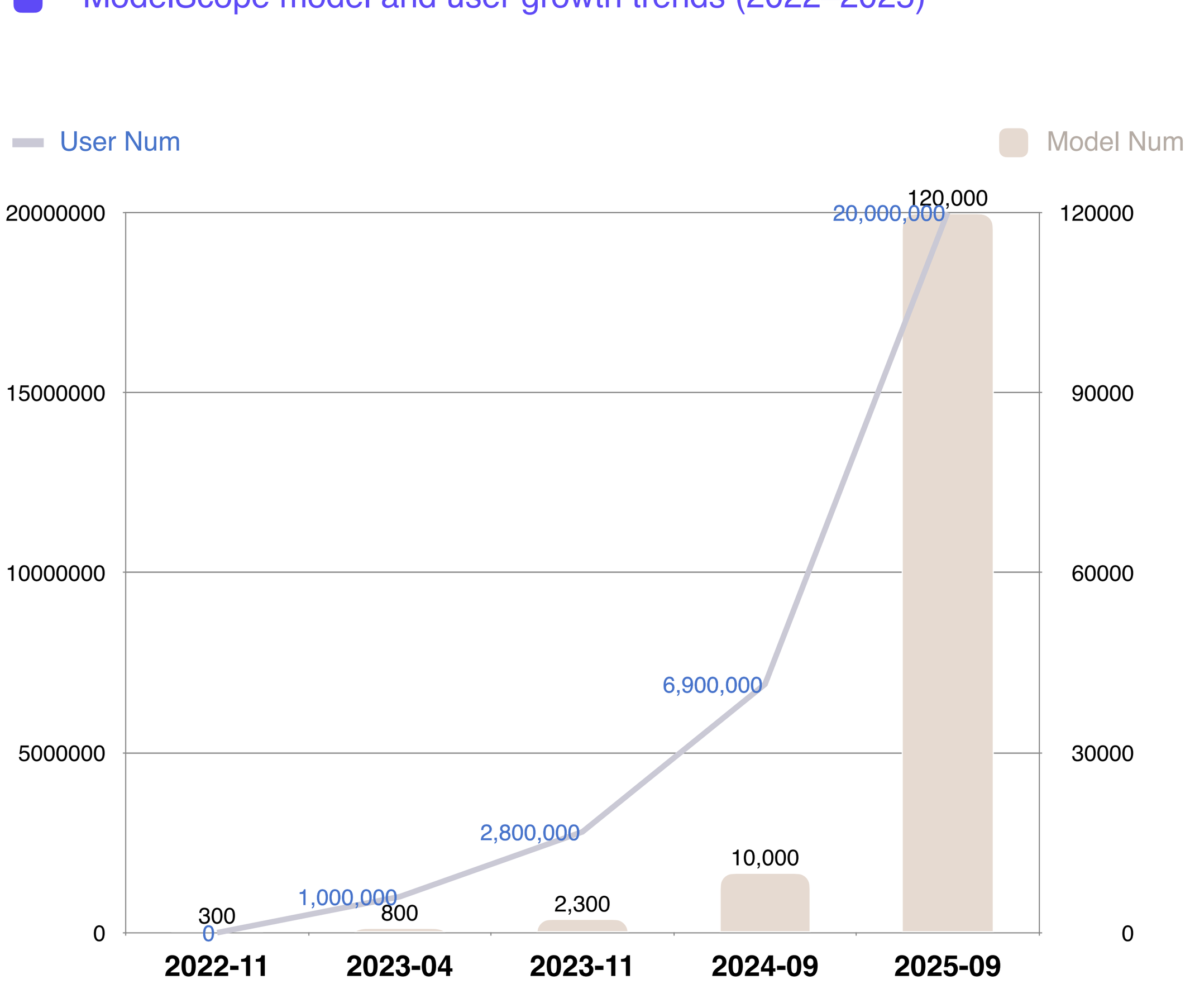
At the heart of this ecosystem is a diverse developer community—from model contributors to application builders—together forming a full innovation chain that accelerates AI iteration and industry adoption in China.

4.1 Ecosystem in Action

ModelScope has become the central hub for open model releases and distribution in China. With contributions from over 800 organizations and countless independent developers, it now hosts a rich repository of models spanning NLP, computer vision, speech, and multimodal domains.

The so-called "Hundred-model Race" is unfolding here. Since 2023, leading Chinese models such as Qwen, GLM, Baichuan, InternLM, and Yi have made their open-source debuts on ModelScope. By 2025, almost all top-tier Chinese models—such as DeepSeek, ERNIE, Hunyuan, Bytedance Seed, Kimi, MiniMax, StepFun, Kuaishou and Bilibili—have joined the ecosystem. ModelScope has truly become the "home base" for China's open models, driving strong network effects and a growing developer community.

ModelScope model and user growth trends (2022–2025)



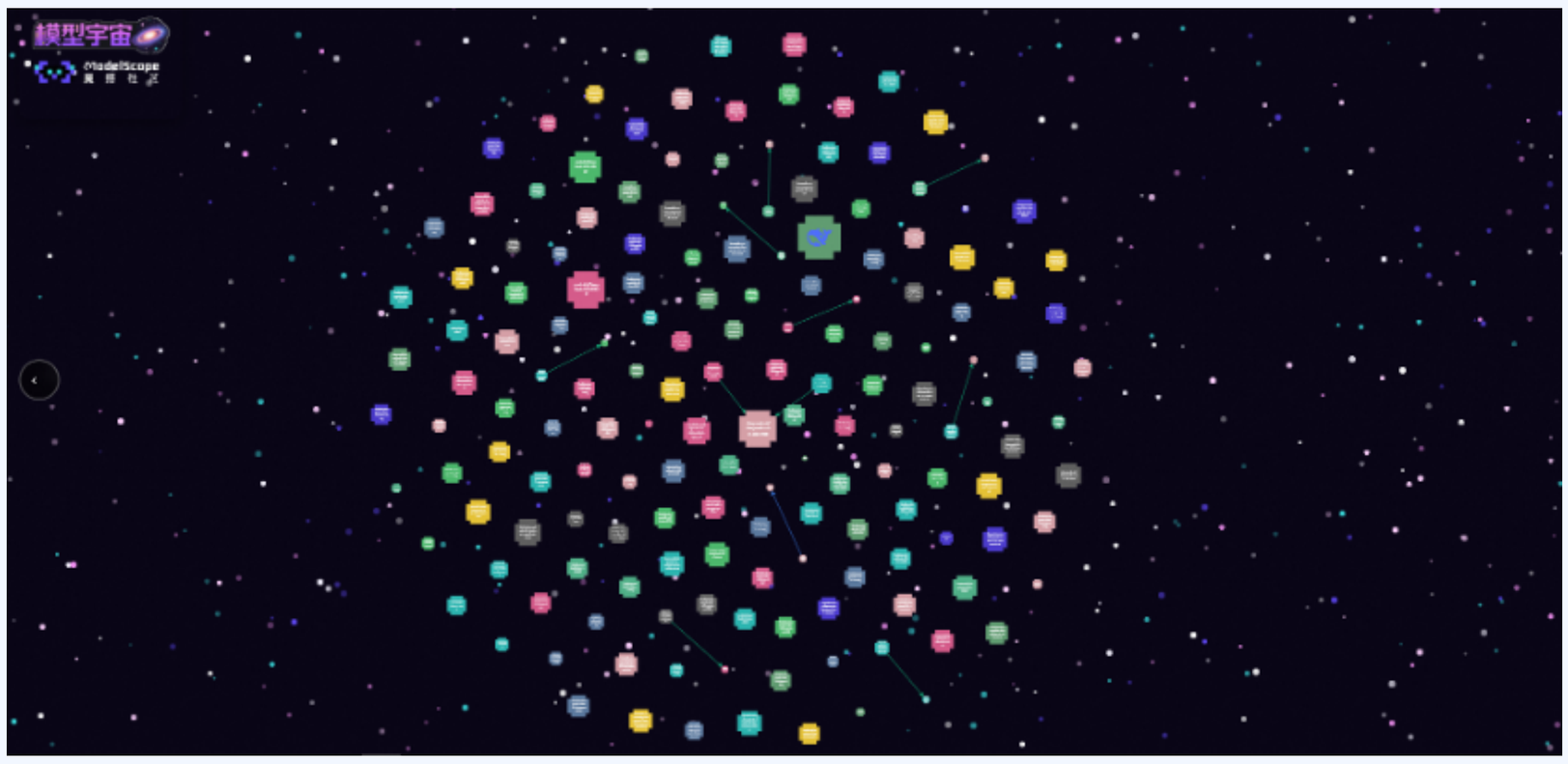
4.2 The Innovation Flywheel

ModelScope has evolved far beyond a repository of models — it now functions as a full-stack innovation engine. Equipped with end-to-end tools for downloading, fine-tuning, training, and deployment, the platform empowers developers to efficiently build upon open-source models across language, vision, speech, and multimodal domains.
By leveraging fine-tuning, quantization, and multimodal expansion, developers have created diverse "model families," forming a thriving "model universe."

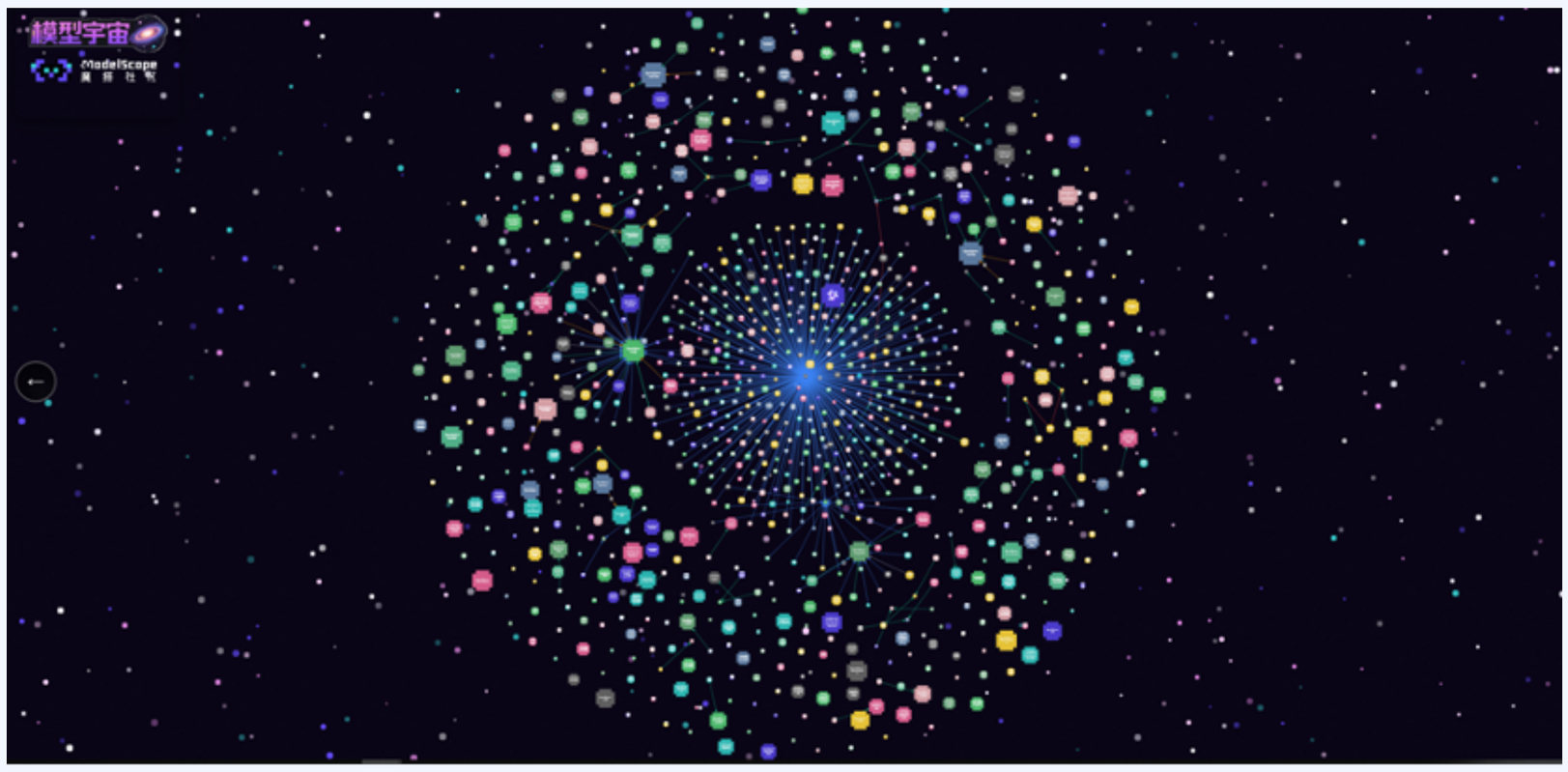
- The Model Universe Map — constructed from lineage relationships across open models on ModelScope.

- Starting from major open foundations such as Llama, Qwen, and DeepSeek, community developers have derived over **56,000** offspring models—accounting for **49%** of all models on the platform. Among them, the four key base models—Qwen, DeepSeek, GLM, and Llama—alone have spawned over 22,000 derivatives, with total downloads surpassing **150 million**.

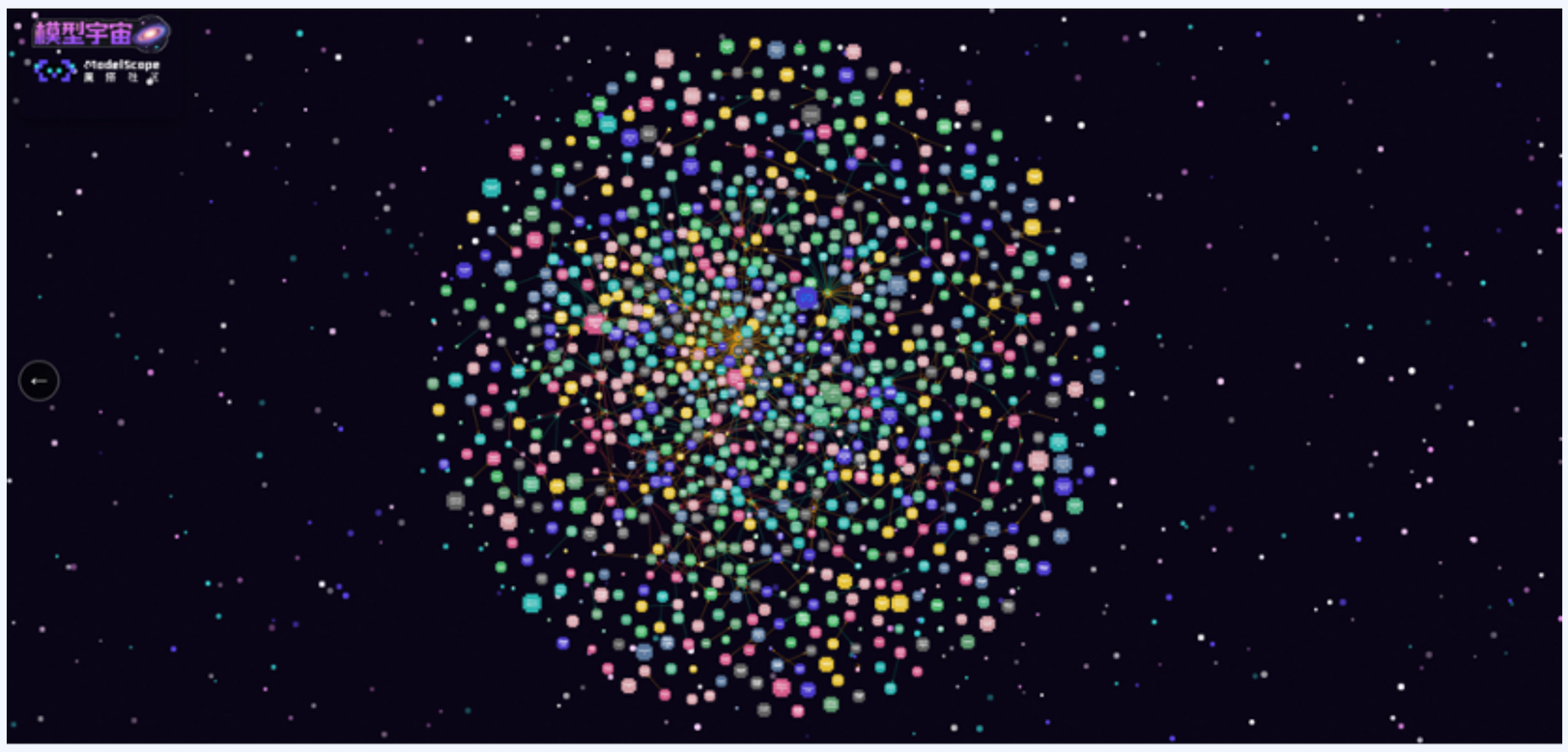
Model Lineage Maps within the ModelScope Ecosystem



✦ DeepSeek Model Lineage



✦ Qwen Model Lineage



✦ Llama Model Lineage

4.3 Applied Breakthroughs

As the model ecosystem matures, ModelScope has become a true AI innovation testbed. Developers freely combine models and services to build real-world applications. With MCP and Studio, complex AI capabilities are modularized into "Lego blocks," making innovation accessible to everyone.

MCP —The Innovation Accelerator

- The MCP Hub hosts **5,500+** services with over **500 million** API calls.

Developers can mix and match these modules to quickly build apps—from multimodal generation to intelligent customer service.

Studio — The Creator's Playground

ModelScope Studio offers a low-code platform with built-in computing resources for seamless AI application deployment. Over **14,000** developers have created **23,000** apps across 20+ industries, and 95% were built by individuals — showcasing the power of technological democratization.

Turning AI Ideas into Real Applications

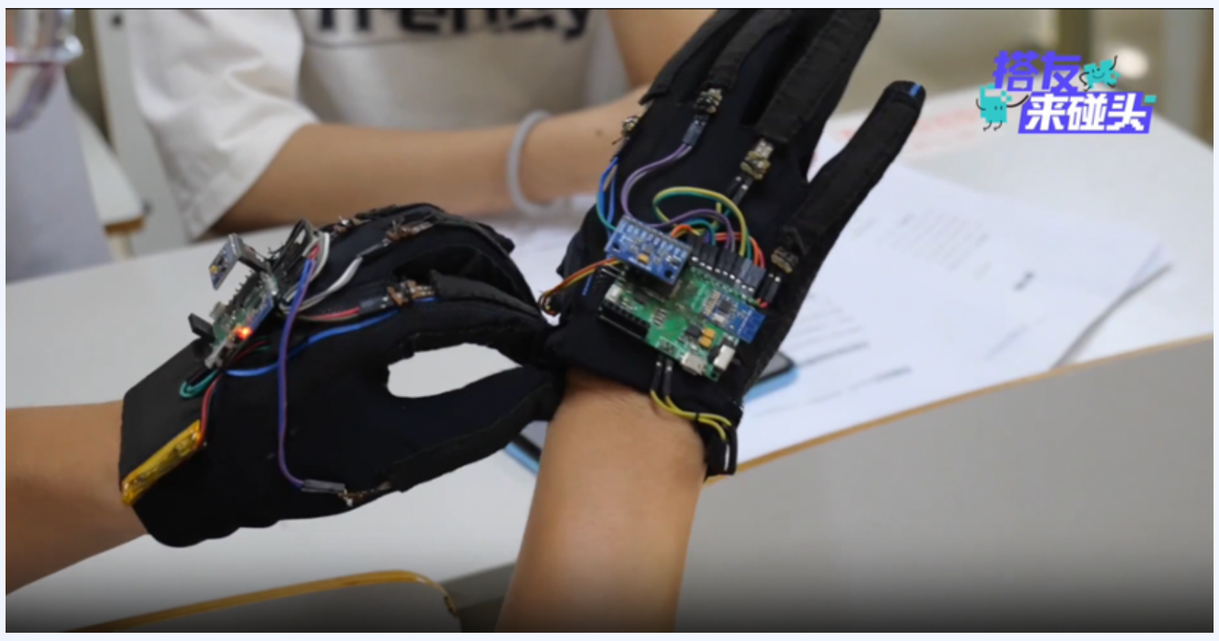
The rise of low-code and no-code environments has further lowered the barrier to creation. With conversational interfaces, workflow tools, and coding models, even non-technical users can quickly prototype interactive AI applications. On ModelScope:

- 4,000+ applications have been created through natural language-based tools;
- 8,000+ developers have trained 24,000+ LoRA models through lightweight data labeling — many being their very first AI projects.

Here, creativity surpasses technical barriers. With ready-to-use models, plug-and-play tools, and flexible service APIs, ModelScope has become a true playground for turning AI ideas into real-world applications.

Team at Xiamen University of Technology used the open-source Whisper speech recognition model on ModelScope to build a sign-language translation glove helping people with hearing impairments communicate.

CASE_1



CASE_2

Students at the University of Chinese Academy of Sciences (UCAS) deployed the open-source Qwen2-VL model on edge devices to build a robotic arm for efficiently restoring bleached coral reefs.

4.4 New Industry Frontiers

ModelScope community has evolved from a model repository into a vibrant AI innovation hub. Developers not only access models but also drive application innovation, technical exchange, and business exploration.

Development has become more accessible: from downloads and API integration to Lego-style MCP service composition, lowering barriers and enabling domain experts—researchers, designers, doctors—to turn from users into creators.

Industry adoption is growing rapidly, with hundreds of companies leveraging ModelScope models across smart retail, intelligent manufacturing, and public services.

Enterprise Cases

CASE

- XinYan Group (CeCe App): Fine-tuned Tongyi series models to create the vertical emotional companion model XinYuan, with a 3D online psychological sandbox for AI-driven mental wellness.
- YunFu Intelligent: Built China's first AI voice customer service agent using ModelScope open-source ASR, LLM, and TTS models, reducing startup barriers and costs.
- "Chasing Stars AI": Developed a multimodal audio picture book tool for children with autism using ModelScope-Agent, serving 200,000+ users.

> In the new workflow, human value lies in leveraging AI for higher-level architecture design and value creation. Engineers must—much like project managers—clearly delineate the division of labor between humans and AI, and skillfully steer AI systems through precise prompting.

Developer Perspective

Chapter 5

THE NEXT WAVE

— New Species of AI Developers

This report begins with AI-era developers' insatiable thirst for knowledge and culminates in the flourishing of practical creation. We have seen how developers iterate their understanding on Zhihu, building mental maps to navigate the future, and how they achieve practical breakthroughs within the ModelScope ecosystem, gaining powerful tools to turn blueprints into reality.

Looking ahead, we see more than a continuation of trends — we see the emergence of entirely new roles. The "new breed of AI developers" is the inevitable outcome of this evolution. They are the creators and definers of a new era, heralding a chapter driven by countless developers and opening a prologue to an intelligent age brimming with endless possibilities.

Future Outlook: A New Breed of AI Developers

As AI technology sweeps across the globe, developers are entering an unprecedented era of creative explosion. Standing at this new starting point, we foresee AI development evolving from a niche pursuit to a more accessible, intelligent, and personalized paradigm. Three key trends will shape the next decade of the AI developer ecosystem:

✦ Agent Builders: "Wish-fulfillment" AI agent development

AI agents will become developers' capable "interns." By issuing natural language instructions, developers can have AI autonomously understand requirements, plan tasks, write code and deploy solutions. The shift from Coding with AI to Coding with Agents means AI agents will independently interpret complex tasks, decompose objectives and execute end-to-end development workflows.

✦ Open-source Advocates: Driving collaborative innovation

Open-source communities will remain the cultural and technical crucibles of AI democratization. Developers contribute code, share knowledge, exchange ideas, and collaboratively solve problems. This open, cooperative model accelerates end-to-end innovation from algorithms to applications, ensuring AI technology continues to advance sustainably.

✦ Commercial Creators: Solo-crafted, high-value products

Widespread AI access empowers independent developers and small teams to quickly validate ideas, build products, and launch them. This lightweight approach lets individuals tackle specific "small" problems, creating valuable, profitable solutions and ushering in a golden age for solo ventures.

知乎 × ModelScope 魔搭社区

Envisioning the Future AI Developer Ecosystem

CASE_1

Developer Perspective:

In the future, developers won't just be programmers—they will be creators or product architects.

Their main work is managing a development "team" of specialized AI Agents.

I'll start my AI team: "Agent-UI, handle the interface"; "Agent-Security, handle security and auth"; "Agent-DB, manage data consistency."

I give high-level instructions, like "Build a data dashboard for enterprise clients."

Autonomous Collaboration: These AI Agents communicate, hold meetings, assign tasks, and perform code reviews like a real team. Agent-UI requests data formats from Agent-DB, and Agent-Security automatically applies firewall rules to new APIs.

CASE_2

Developer Perspective:

Future developers will need broader skills—they may be a mix of product manager, psychologist, and artist. Coding is only basic literacy; the ability to understand people will define value.

With technical and language barriers removed, the only limits are a developer's ideas and aesthetics. One person can be a full team, launching a profitable product over a single weekend.

> In my view, AI-era development is not a race between humans and machines, but the starting point of a new civilization of human-AI co-creation.

Developer Perspective

Special Thanks

The preparation and release of this report benefited greatly from the support of numerous developer communities and individuals.

We extend our heartfelt gratitude, especially to the following partners who provided crucial support for the survey (listed alphabetically by community name):

Datawhale 硅星人 researchAI 十字路口 特工宇宙 - AGENT UNIVERSE -

We also sincerely thank every developer who participated in the survey and shared their valuable insights.

We look forward to continuing to work hand in hand with developers to explore the future of the AI era.