Registration Form for Representative Achievements

Applicant: Yanghua Xiao **College/School: College of Computer Science and Artificial Intelligence**

Research Category: [ ] Basic Innovation [√] Applied Innovation

Achievement Title: Self-Evolving Agent Systems: Applications and Governance
List of Supporting Materials for the Achievement (itemize the high-level papers, monographs, authorized patents, policy advisory reports, etc. that constitute this achievement): I. High-Level Papers 1. Siye Wu, Jian Xie, Yikai Zhang, Aili Chen, Kai Zhang, Yu Su, Yanghua Xiao (corresponding author). ARM: Adaptive Reasoning Model. Neural Information Processing Systems 38 Main Conference (NeurIPS 2025) (NeurIPS 2025 Highlight Paper) II. Representative Open-Source Systems and Platforms 1. GenericAgent, a self-evolving agent (https://github.com/lsdefine/GenericAgent, MIT License, more than 14,200 GitHub Stars, more than 1,700 forks) 2. SkillsHub, a million-scale skill library platform (more than 1.46 million AI Skills), and SOPHub, a shared platform for operational flows III. Authorized Patents 1. Method and apparatus for retrieval-based question answering with large models based on document structure trees, Patent No.: 202510050486.8 2. Apparatus for evaluating the problem-handling capability of large language models under incomplete information, Patent No.: 202410780036.X IV. Policy Advisory Reports 1. Intelligence-Native Enterprises Shape a New Landscape of the Intelligent Economy, People's Tribune, 2025, No. 23 2. Security Concerns of Agents Behind the “Lobster-Raising” Craze, People's Tribune, 2026, No. 6
Brief Description of the Achievement (200-300 characters) To address the three challenges of context bloat in long-horizon tasks, difficulty in reusing experience, and difficulty in controlling security, the applicant proposed a self-evolving agent architecture based on the principle of “maximizing the information density of context,” led the development of and open-sourced the general-purpose self-evolving agent GenericAgent (GA), which uses atomic tools, hierarchical memory, and task reflection to consolidate verified experience into reusable skills and significantly reduces token consumption in the evaluations set out in the technical report; since its open-source release it has gained more than 14,000 GitHub Stars and has been listed in several surveys as a representative self-evolving system; the applicant also proposed ARM, a fast-and-slow-thinking adaptive reasoning model, which was selected as a NeurIPS 2025 Highlight Paper and won the Huawei Spark Award. The results have been applied to the Shenzhen Futian “government lobster” (which

topped Weibo's trending list and received continuous CCTV coverage) and to the office-assistance system of the two offices of Qingpu District, Shanghai (with eight functions launched in trial operation); as of September 26, 2026, the mobile version of GA has covered 654 external devices and completed about 23,000 AI tasks. Policy advisory recommendations were adopted as internal references by Xinhua News Agency and China Media Group; as chief scientist the applicant has supported the industrialization of Kuakua Jingling (now valued at RMB 3 billion); as the person in charge the applicant has undertaken the building of the Artificial General Intelligence Laboratory of the Qingpu-Fudan Institute of Future Technology (with a cumulative investment of RMB 150 million); and the applicant has given keynote reports at events such as Huawei's Global Strategy and Technology Workshop.

Notes:

I. Scientific Contributions

Agents are the main form in which large models reach every industry. Since 2026, autonomously executing agents represented by OpenClaw have spread rapidly around the world, and “whether agents can reliably and cost-effectively execute real tasks and keep evolving” has become a new focal point of competition in artificial intelligence. However, the deployment of general-purpose agents still faces three core difficulties. In execution, tool descriptions, memory, and environmental feedback accumulate continuously in long-horizon tasks, and context bloat degrades decision quality and sends token costs out of control. In evolution, the experience gained in tasks is difficult to consolidate into reusable capabilities, so the system “stays unchanged after a thousand uses.” In governance, government and industrial scenarios require that data not leave the domain, that behavior be auditable, and that security be controllable, whereas mainstream open-source agents have enormous code bases and security boundaries that are hard to manage uniformly. In response, this project conducts systematic research on the architecture, reasoning, and governance of self-evolving agents, yielding results in the following three aspects:

1. A self-evolving agent architecture based on the principle of “maximizing the information density of context” was proposed. The applicant proposed this design principle and led the system development, using about 3,000 lines of core code, 9 atomic tools, five layers of on-demand memory (L0-L4), and a closed loop of “task reflection - experience consolidation - skill reuse” to enable agent capabilities to grow autonomously with use; under the evaluation tasks and baseline conditions set out in the technical report, token costs were reduced by 3 to 10 times compared with mainstream systems. On this basis, the general-purpose self-evolving agent GenericAgent (GA) was developed and open-sourced.

2. A reasoning method that adaptively switches between fast and slow thinking according to

task difficulty was proposed. The applicant guided and completed this work as corresponding author; addressing the problem of “thinking-length inflation” in reasoning models, the adaptive reasoning model ARM was proposed, which significantly compresses reasoning overhead while maintaining accuracy. It was selected as a NeurIPS 2025 Highlight Paper, won the Huawei Spark Award, and its technical ideas were extended to the efficient-operation design of GenericAgent.

3. Practices for the application and governance of self-evolving agents oriented to government and industry were formed. With the applicant taking the lead and with GenericAgent as the unified base, a technical route for government agents was formed, namely “minimalist architecture + autonomous execution + security sandbox + full-process traceability,” and put into operation in Futian District of Shenzhen, Qingpu District of Shanghai, and elsewhere; the SkillsHub and SOPHub skill-sharing platforms were built; and policy advisory recommendations were put forward on the security concerns of “lobster”-type agents and on the development of intelligence-native enterprises, with the recommendations adopted in Xinhua News Agency reference reports and China Media Group internal-reference products.

The related papers of the above results were selected as NeurIPS 2025 Highlight Papers, and the scheme won the Huawei Spark Award (see Figure 1); GenericAgent was open-sourced in January 2026, has more than 14,000 GitHub Stars, and once topped the GitHub trending list (see Figure 2), and is listed in several surveys alongside Hermes Agent, SkillClaw, and EvoAgentX as a representative self-evolving system; as the core of the Shenzhen Futian “government lobster,” it topped Weibo's trending list and received continuous CCTV coverage (see Figure 3); in its first three months online, the GA mobile version completed 23,000 AI tasks and was exhibited at the 2026 Inclusion · Bund Conference (see Figure 4); it supported the approval and construction of a General Artificial Intelligence Laboratory with a total budget of RMB 150 million as well as joint laboratory cooperation with four companies totaling RMB 27 million (see Figure 5); the applicant was invited to give keynote reports at Huawei STW, the China AI Agent Conference, and other events.

II. Evaluation of Representative Publications

The general-purpose self-evolving agent GenericAgent, for which the applicant proposed the design principles and led the development (technical report) puts forward the unified design principle of “maximizing the information density of context” and, with about 3,000 lines of core code, 9 atomic tools, and five layers of memory (L0-L4), enables the autonomous growth of agent skills: on Lifelong AgentBench it achieves a 100% completion rate while consuming only 27.7% of

the input tokens of Claude Code and 15.5% of those of OpenClaw; across 9 rounds of repeated tasks, token consumption fell by 89.6% and the number of calls converged from 32 to 5. The technical report is indexed in Hugging Face Papers (with 23 likes and inclusion in 8 paper collections). Academia has already regarded it as a representative self-evolving system: MOSS (arXiv 2605.22794) lists GenericAgent alongside Hermes Agent, SkillClaw, and EvoAgentX as four representatives of application-level self-evolving agents; Bayesian-Agent (arXiv 2606.08348) uses GenericAgent as a baseline and builds a dedicated adapter for it; surveys such as Self-Improvements in Modern Agentic Systems: A Survey include it; and Qiang Zhu, Qiushi Distinguished Research Fellow at Zhejiang University, places it in his paper within the lineage of self-evolving agents that "transform interaction experience into persistent artifacts such as memory, prompts, skills, workflows, strategies, or architectures." As a representative "lobster"-type agent from a university, it has gained recognition from both academia and industry, and Jiefang Daily described it as "a benchmark for self-evolving agents at Chinese universities."

The adaptive reasoning model ARM proposed by the applicant, which automatically selects the form of reasoning according to task difficulty (Paper 1) was selected as a 2025 Highlight Paper of NeurIPS (a CCF Class A conference). In a paper, Jianye Hao, Elite Professor at Tianjin University, evaluated it as an effective improvement strategy over existing reinforcement learning that can effectively suppress thinking-length inflation and improve the accuracy of reasoning models. This "adaptive balancing of fast and slow thinking" scheme won the Huawei Spark Award, and its technical ideas were extended to GenericAgent, providing the methodological basis for its low token cost and efficient operation. The applicant has now won the Huawei Spark Award three times (2022 for automatic knowledge graph updating, 2024 for continual learning of large models, and 2026 for adaptive fast-and-slow thinking), and Jiefang Daily / Shanghai Observer published a feature report on March 28, 2026 entitled "Winning the Huawei Spark Award Three Times: The Fudan Professor Who 'Raises Lobsters' Solves Real Industrial Problems."

The applicant has continued to offer recommendations on agent governance. Intelligence-Native Enterprises Shape a New Landscape of the Intelligent Economy and Security Concerns of Agents in the "Lobster-Raising" Craze were published in People's Tribune (see Figure 6), putting forward measures on the development path of intelligence-native enterprises and the safety governance of autonomously executing agents; the applicant's results and views on "artificial intelligence and social governance" were absorbed and adopted in three Xinhua News Agency reference reports, providing decision-making reference for the central leadership, and the Xinhua News Agency Shanghai Bureau wrote to Fudan University in December 2024 to express its thanks

(see Figure 7); in March 2026, the applicant gave an exclusive interview to China Media Group on “the risks and hidden dangers brought by AI agents such as OpenClaw”; the manuscript was adopted by a China Media Group internal-reference product on March 20 and played an important role in decision-making consultation, and China Media Group wrote to express its thanks in June 2026 (see Figure 8).

III. Application and Deployment of the Research Results

1. Open-source ecosystem and real-world use. GenericAgent was open-sourced on GitHub under the MIT License on January 11, 2026, and V1.0 was released on January 16 (earlier than OpenClaw's release on January 25, 2026). As of September 2026 it has 14,200 GitHub Stars, more than 1,700 forks, and 1,359 cumulative commits; it once topped the GitHub daily trending list (indexed by Trendshift) and ranked fourth globally on the GitHub trending list in April 2026, ahead of Hermes Agent, and has been followed and spread by several well-known overseas bloggers (see Figure 9). The technical report is indexed in Hugging Face Papers and has been included in multiple paper collections; the Datawhale community produced the introductory tutorial Hello GenericAgent; the community has voluntarily developed third-party GUI clients such as ga-manager, galley, A3Agent, and GenericAgent-Admin; 22 user communication groups have been established; and Windows/macOS desktop versions with one-click installation were released in May 2026.

A mobile version of GA that runs on users' own phones was released. Unlike most mobile agents, which run in cloud simulators or web wrappers, the GA mobile version runs directly on the user's own phone and operates apps in which the user is already logged in. Counting from its first external user on June 23, 2026, in 96 days online (as of September 26, excluding internal and test devices) it has accumulated 654 external user devices and 386 logged-in accounts; users have issued 26,000 instructions and AI has completed 23,000 tasks (with a 73% task completion rate and a median task duration of 56 seconds), with 157,000 agent tool calls and 84,000 AI phone-control actions, and 147 apps have been controlled by AI (including WeChat, Xiaohongshu, Taobao, Meituan, and Douyin); the daily active peak is 99 devices, retention among the first batch of users still reached 30% in week 8, and average second-week retention across batches is 44%.

2. Skill platform development. The SkillsHub million-scale skill library went online on March 10, 2026, gathering more than 1.46 million AI Skills (indexed from public resources such as GitHub and Skills.sh), finely classified by domain, type, and scenario and equipped with a recommendation engine to provide agents with a “capability index marketplace”; as one of the earliest “lobster”-related achievements from a Chinese university, it was reported by the official

Fudan University website and Sina Finance, among others. The SOPHub operational-flow sharing platform is open to GA and gathers more than 200 high-quality SOPs contributed officially and by the community, covering areas such as browser operation, communication tool integration, phone control, and content production; it has been integrated as a native capability of GA, which can automatically download and upload skills.

3. Government agent applications. The Shenzhen Futian "government lobster," DinTal Claw, is built around GenericAgent and was released by Futian District on March 6, 2026; it is among the first batch of self-developed agents deployed locally on a government extranet anywhere in the country, covering scenarios such as research and analysis of public livelihood demands and the processing of public-place hygiene permits, and achieves "hour-level tasks completed in minutes" with a comprehensive operating cost of less than 15% of that of the traditional office model. Topics such as #FirstBatchGovernmentLobsters# and #CivilServantsNowKeepGovernmentLobsters# topped the trending lists of multiple Weibo rankings; CCTV News focused on it and reported continuously (with more than 440,000 views), and more than 20 media outlets followed up, with CCTV News commenting that "innovation in domestically developed lobsters is accelerating, and their core advantages are gradually emerging."

The "intelligent government affairs - office assistance" system of the General Office of the CPC Qingpu District Committee and the General Office of the Qingpu District Government in Shanghai uses GenericAgent as its technical base, went into trial operation on the government extranet on July 31, 2026, and has now launched a total of eight agents: speech drafting, document proofreading, generation of notifications for Standing Committee meetings, consistency assessment of issued documents against the 39 measures for reducing burdens at the grassroots level, daily briefing generation, policy compliance review, legality review of government documents, and generation of agenda items for executive meetings. This has brought about a shift from "manual drafting" to "intelligent generation plus manual review." Data across the entire system chain stays within the intranet; by self-deploying the DeepSeek V4 Flash base model on eight Ascend 910B units and optimizing fault-tolerance mechanisms, response speed has increased by 3 to 5 times and concurrency has risen from 3 to 12; a comparative evaluation of agent frameworks themselves shows that the GenericAgent framework succeeded on all 74 requests without introducing failures or infinite loops, and under low concurrency achieved overall throughput 9.86% higher and average latency 7.31% lower than the bare model. In terms of application results, all eight applications of the two offices have completed end-to-end process integration and are called stably on the intranet; the generation of Standing Committee meeting notifications has been verified against officially

issued notifications in multiple actual Standing Committee meetings; the consistency assessment of issued documents against the 39 measures for reducing burdens at the grassroots level outputs structured “Reference Opinions” containing a three-layer evidence chain; and customized generation in the speech style of specific leaders has passed sample verification; during the trial operation, 10 performance, functional, and network-adaptation issues were identified and resolved, and the two sides drafted the “Framework Agreement on Cooperation in Intelligent Government Affairs” to establish a long-term industry-academia-research cooperation mechanism. In addition, the policy question-answering system of the Qingpu Free Trade Zone has imported 2,587 policy documents and has entered user acceptance testing.

4. Verification in industrial and scientific scenarios (all based on the same GenericAgent base, at the prototype verification or pilot deployment stage). Intelligent solder-dispensing machine EDispense: touchscreen controls are mapped into tools callable by GA, enabling “one sentence driving AOI alignment + Gerber reasoning + solder-dispensing execution,” with a safety confirmation gate for motion-type operations; it has been open-sourced. Chip back-end design RTL-to-GDS: based on SMIC's 40nm process and the dual toolchains of Synopsys and Cadence, GA autonomously wrote and debugged TCL scripts and autonomously consulted manuals by trial and error, completing the full RTL-to-GDS flow with all 478 comparison groups passing, an Fmax of 283.3MHz, and key DRC items cleared to zero. Nowcasting of severe convection: piloted at the Shanghai Meteorological Service, where GA learned the experience of a senior forecasting expert across 67 data interfaces and established a 122-day back-testable system, and in a review of a specific case issued its warning about 50 minutes earlier than official channels. FVCOM ocean hydrodynamic modeling: GA autonomously acquired public data, compiled and deployed in the cloud, and diagnosed and fixed the root cause of model crashes, compressing a traditional one-to-two-month modeling cycle to several hours in a test case and automatically delivering a report and 11 figures. Intelligent IT equipment operations and maintenance: expert experience was consolidated to automate the operation, inspection, maintenance, and optimization of equipment ranging from computing devices to industrial machinery, and a large-model inference framework autonomously optimized by GA achieved a 78% speedup.

5. Commercialization and industrialization of research results. The applicant serves as chief scientist of Shenzhen Kuakua Jingling Technology Co., Ltd.; GenericAgent is jointly engineered by the Knowledge Works Lab of Fudan University and the company, and its “government lobster,” DinTal Claw, is the only officially authorized commercial version of GenericAgent. According to public reports, the company completed an investment from a fund under CICC Capital in December

2025, with a valuation approaching RMB 3 billion (Southern Metropolis Daily, May 2026), and is known as a “unicorn in the digital-intelligent employee track”; it received the Huawei Global Outstanding Partner Award for 2025-2026 and plans to file for an initial public offering in Hong Kong, China in the first quarter of 2027; its AI digital-intelligent employees have helped resolve more than 1,300 disputes in Futian District of Shenzhen and increased mediation efficiency by 70%. The two sides signed a commissioned research project, “Research and Application of Key Technologies for Self-Evolving Agents” (2026).

A “General Artificial Intelligence Laboratory” with GenericAgent as its unified kernel has been approved for construction at the Shanghai Qingpu-Fudan Institute of Future Technology (2026-2029, with a total budget of RMB 150 million), with the applicant serving as the laboratory director and directing product outreach to three types of recipients: government and enterprises, industry, and individuals. Relying on the laboratory, agreements for university-enterprise joint laboratories or technical cooperation have been signed with four companies, with a total contract value of RMB 27 million: RMB 5 million with Shanghai Qiyuan Xindongli Technology Co., Ltd. (August 2026 - August 2029), RMB 12 million with Shenzhen Fengchao Hulian Technology Co., Ltd. (September 2026 - September 2029), RMB 5 million with Wuxi Huaguang Environment and Energy Group Co., Ltd. (September 2026 - September 2029), and RMB 5 million with Shenzhen Kuakua Jingling Technology Co., Ltd. (September 2026 - September 2029), carrying out joint research and development with GenericAgent as the common technology base in fields such as chips, industrial interconnection, environmental energy, and digital-intelligent employees for government and enterprises (see Figure 10)

6. Academic and industrial influence. In 2026, the applicant delivered the keynote “Technological Breakthroughs and Insights of Large-Model-Driven Self-Evolving Agents” at the main venue of Huawei STW (Strategy and Technology Workshop), keynote reports titled “Model-Driven Self-Evolving Agents: Technological Insights and Trend Outlook” at the 2026 China AI Agent Conference and the Global Artificial Intelligence Technology Conference (GAITC), the talk “Self-Evolving Agents: Cognition and Practice” at the Network AI Technology Forum, and keynote reports at the 2nd Pujiang AI Academic Annual Conference and the 2026 Enterprise Digital-Intelligence Innovation Summit, among others. GenericAgent was exhibited at the 2026 Inclusion · Bund Conference (September 9-12) under the theme “pioneer of self-evolving agents,” where the GA mobile version was displayed: over the four exhibition days the platform completed a cumulative 1,401 AI tasks (431 booth demonstrations plus 970 on users' phones) with 123 active devices, including 43 newly activated devices and 39 newly registered accounts, the former

approaching the natural increase over the entire two weeks before the exhibition (46 devices) and the latter exceeding it (31 accounts); 52 new devices were added in the week of the exhibition, the highest single-week figure since August, and daily new registrations and daily effectively activated users rose to 4.4 times and 4.7 times their pre-exhibition levels respectively, with DAU up 42%; among new users during the exhibition, 72% completed their first AI task (versus 50% before the exhibition), and 84% of activations occurred during the 11:00-17:00 exhibition hours, consistent with the scan-to-install-and-use experience on site; comparing the 18 days after the exhibition opened with the preceding 18 days, newly activated devices increased by 77%, newly registered accounts by 79%, and user instructions by 48%. The related results received sustained coverage from CCTV News, Jiefang Daily / Shanghai Observer, Synced, 21st Century Business Herald, Nanfang Plus, Southern Metropolis Daily, Guangzhou Daily, Shenzhen News, the Shanghai Municipal Commission of Economy and Informatization, 36Kr, and others, and the applicant gave interviews including “Three Questions for the Chief Scientist of the ‘Government Lobster’: Is It Safe? Does It Save Money? Will It Replace Humans?” and “Yanghua Xiao, Chief Scientist of the DinTal Claw ‘Government Lobster’: The Agent ‘Singularity Moment’ Has Arrived.”



Figure 1. The fast-and-slow-thinking adaptive reasoning scheme won the Huawei Spark Award (2026)

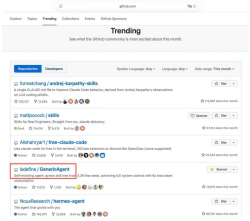


Figure 2. GenericAgent ranked fourth globally on the GitHub monthly trending list (April 2026)



Figure 3. CCTV News reported on the Shenzhen Futian “government lobster” built around GenericAgent



Figure 4. GenericAgent booth at the 2026 Inclusion · Bund Conference (visitors trying the GA mobile version)



Figure 5. The Shanghai Qingpu-Fudan Institute of Future Technology signed joint laboratory co-construction agreements with four companies in a single ceremony



Figure 6. The policy advisory article Intelligence-Native Enterprises Shape a New Landscape of the Intelligent Economy was published in People's Tribune

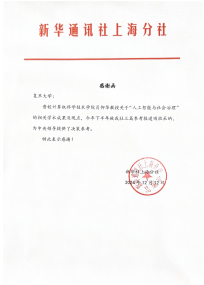


Figure 7. Letter of thanks from the Xinhua News Agency Shanghai Bureau: the applicant's results and views on “artificial intelligence and social governance” were absorbed and adopted in three reference reports (December 2024)

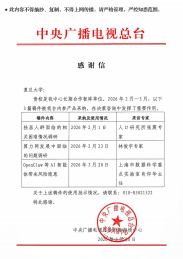


Figure 8. Letter of thanks from China Media Group: the applicant's interview manuscript on “the risks and hidden dangers brought by AI agents such as OpenClaw” was adopted by a China Media Group internal-reference product (June 2026)

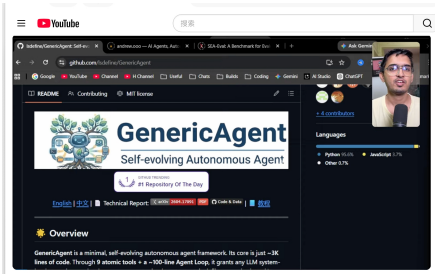


Figure 9. An overseas blogger's feature video, “GenericAgent Beats OpenClaw & Hermes Agent”



Figure 10. On behalf of the Shanghai Qingpu-Fudan Institute of Future Technology, the applicant signed trilateral strategic cooperation agreements with the Shanghai Academy of AI for Science and the Shanghai Zuquan Institute of Innovation and Transformation respectively