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Research on the Design of AI Agent Platform for Guangzhou Industrial Design Service Driven by High Quality Development

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Abstract: This paper aims to address the current inefficiencies in design creation, market transactions, achievement transfer, and collaborative operations within Guangzhou's industrial design circle, and achieve full digitalization and platformization of industrial design services, thereby enhancing user experience. By employing methods such as desk research, field surveys, expert interviews, and big data mining and analysis. Meanwhile, leveraging the researchers' industry insights and professional experience, a comprehensive industrial design model is proposed. This model is designed to develop an intelligent application platform called SuiZhi GongChuang (IDesignAI) for Guangzhou's industrial design institutions, designers, and other stakeholders. The platform's user interface is innovatively designed with a focus on user-centricity, aiming to enhance the efficiency and user experience of using the intelligent platform. This research design offers significant theoretical and practical guidance for the innovation of Guangzhou's industrial design service model, improving quality and efficiency, and facilitating the comprehensive intelligent transformation and upgrading of the industry.

Keywords: Guangzhou industrial design; High-quality development; AI agent platform; User interface design

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1. Introduction

In the current new situation, high-quality development has become a new trend and requirement in global industrial development [1]. Industrial design, as a critical component of the industrial value chain and a key driver of high-quality development, has seen its service model undergo significant digitalization and intelligent transformation, which is now a crucial measure and pathway to enhance regional industrial capabilities [2]. However, the efficiency of Guangzhou's industrial design in boosting regional economic growth remains low, and the industry itself faces challenges such as inefficiencies in design creation, market transactions, achievement

transfer, and collaborative operations. This indicates that Guangzhou's industrial design circle urgently needs to improve quality, optimize efficiency, and achieve high-quality development. Therefore, achieving comprehensive intelligence in Guangzhou's industrial design services and building an AI agent platform for these services is of great practical value and serves as a benchmark for promoting innovation in service models, enhancing efficiency, upgrading industrial intelligence, and achieving high-quality economic and social development.

2. Development Status of AI agent and digital platforms related to industrial design

2.1. Overview of AI agents based on large models

AI agents based on large models are a focal point in the field of artificial intelligence and one of the most exciting frontier directions [3]. These systems can autonomously perceive their environment, understand natural language, and perform reasoning, decision-making, and interactive actions to achieve specific goals [4]. Their core strengths include continuous learning and evolution, handling complex and ambiguous tasks, and enhancing human-machine collaboration through reasoning and decision-making. They excel at handling open-ended and ambiguous tasks without standard answers, fundamentally differing from traditional software. With the enhancement of multimodal integration and interaction capabilities, the application scope of AI agents based on large models will continue to expand, potentially becoming a "digital avatar" for everyone in their work and daily life.

2.2. Development Status of AI agent based on large models

Currently, AI agents based on large models have evolved from a technical concept into large-scale commercial applications. They are gradually becoming a key application form and a core engine driving the digital transformation of various industries, following APPs and mini-apps, showing significant commercial potential and broad application prospects. AI agents in vertical fields are experiencing explosive growth, with companies accelerating their deployment. 2025 is seen as the year of large-scale commercialization of AI agents [5–6]. A landmark event was the release of ManusAI, the world's first AI agents product, by Monica.im in March 2025, marking a significant start for the commercialization of large model AI agents [7]. Since then, AI agents in specific areas such as medical diagnosis, financial risk control, legal consultation, and education have emerged. These agents possess highly specialized capabilities in specific fields and can deeply optimize applications in particular scenarios. Despite the rapid development of AI agents, research on AI agents in specific regions or vertical fields remains limited, especially in multi-agent systems. Most existing AI agents in vertical fields have functional limitations. For example, e-commerce customer service agents are still at the "question-and-answer" interaction level and lack the ability to integrate multiple tasks and scenarios. Additionally, there are still deficiencies or shortcomings in deep knowledge barriers, complex decision explainability, and data privacy compliance. In recent years, several large AI model tools related to design have emerged, such as Midjourney, Stable Diffusion, and Kaimeng. However, there are no AI agents specifically designed for the industrial design sector yet. There is also a lack of comprehensive intelligent platform solutions that deeply integrate regional industry characteristics, integrate full-process design service resources, and offer strong interactive experiences. In particular, in Guangzhou, a region with a thriving manufacturing industry and high demand for design, how to build an intelligent industrial design service platform that suits local industrial design companies, effectively connects market supply and demand, enhances design service efficiency, and provides a good user experience still requires further exploration and practical validation.

2.3. Development Status of digital platforms related to industrial design

Industrial design is a highly specialized and niche field, characterized by high industry knowledge barriers. With the rapid development and deep integration of digital intelligence technologies, these technologies have found widespread application in industrial design. In recent years, several digital platforms related to industrial design, such as Taihuoniao, Yunzhitu, HuMi, and ShareCreators, have emerged in China. Their specific functions and positions are detailed in **Table 1**. These platforms are transforming the service processes, collaboration methods, and value creation models of industrial design, accelerating its digital transformation and upgrade.

Table 1. Digital platforms in the field of industrial design

Platform name	Main function
Zaowuyun	The AI-driven industrial design platform can use DesignGPT to build an agent design team, with a library of intelligent tools and creative libraries, to achieve AI design and DAM management, thus improving design efficiency and shortening the design process.
Yunzhitu	An Internet employment platform that connects industrial design demanders with engineers and design experts. It manages the release, employment, undertaking, and guarantee transactions of short-and medium-term design projects.
ShareCreators	Provides industrial design digital asset management and team collaboration services, supporting online preview of multiple 3D file formats, intelligent classification and AI search, version management, real-time collaboration, and permission control.
Humi	Realize the aggregation, sharing, innovation, and empowerment of global design resources, improve the efficiency of design collaboration, and reduce the application cost of enterprise tools. Focus on the cultivation, incubation, and retention of design talents, as well as industrial design services, design competitions, and industry incubation.
Taihuoniao	Relying on artificial intelligence to design a transaction engine and design productivity tools, providing services such as design transaction matching, design transformation, product innovation, investment incubation, and omnichannel distribution.
HAIZOL	Providing one-stop industrial design service solutions such as product customization, product appearance design, and parts manufacturing.
ARTTOP	Integrating the resources of the whole industrial design industry chain, the cloud platform provides one-stop services from design to manufacturing for enterprises, helping them accelerate the transformation from “traditional manufacturing” to “smart manufacturing.”

With the integration and empowerment of digital technologies, the industrial design sector has made significant progress in areas such as digitalization and platform development. However, the overall performance of digital and intelligent platforms in industrial design remains unsatisfactory. The sector also faces structural challenges, including insufficient brand building, an incomplete standardization system, and a lack of sustainable profit models. Moreover, the industrial design field is severely lacking in intelligence and innovation, and there is a shortage of truly meaningful industrial design large models and AI agents on the market. Therefore, exploring the construction of specialized industrial design large models and AI agents platforms under the new circumstances is both urgent and strategically significant, and practically valuable.

3. Construction of an AI agent platform for industrial design services in Guangzhou

3.1. Value and objective of the AI agent platform for industrial design services in Guangzhou

Most existing AI agents are based on general large models, which often fall short when addressing specialized,

deep, and complex issues in specific vertical fields. As global large model technology rapidly diverges and evolves, vertical specific large models are emerging quickly. In this new context, building an intelligent platform for industrial design services is a crucial step to promote the transformation and upgrading of Guangzhou's industrial design industry, as well as its shift towards intelligence. This platform also serves as the core engine for shaping new competitive advantages in international competition for Guangzhou's industrial design sector. By deeply integrating artificial intelligence into the entire industrial design service chain and leveraging Guangzhou's industrial foundation and innovation resources, the platform can drive industrial design services to empower all industries, efficiently match supply and demand, optimize design solutions, accelerate the transformation of research results, and facilitate the convergence of global design talent and resources. This will help local brands in Guangzhou enhance their product value and international competitiveness, fostering an original design ecosystem. The construction of the intelligent platform for industrial design services in Guangzhou can transcend the limitations of traditional web or mobile application-based platforms, not only reshaping the industrial design service model and ecosystem in Guangzhou but also activating regional collaborative innovation through intelligent service models and engines. This will provide core support for the development of a world-class advanced manufacturing cluster in the Guangdong-Hong Kong-Macao Greater Bay Area, ultimately achieving the strategic goal of empowering the real economy with industrial design, leading consumption upgrades, and shaping a new city industrial brand. It is evident that constructing an intelligent platform for industrial design services for stakeholders related to Guangzhou's industrial design has significant strategic importance and practical application value.

3.2. Demand analysis of AI agent platform for industrial design services in Guangzhou

Currently, the application of large AI models and AI agents in industrial design is still in its early stages. To develop an AI agent for industrial design services that meets user needs, stratified sampling interviews and questionnaires were conducted among industrial design companies within Guangzhou City. The collected data was presented using a word cloud chart, as shown in **Figure 1**. The current industrial design industry in Guangzhou faces several challenges, including regional development imbalances, resource dispersion, significant information barriers, a single service model, and low efficiency in design creation, market transactions, achievement transfer, and collaborative operations [8]. Additionally, the industry in Guangzhou is looking forward to more efficient AI-empowered design tools and ecosystem connections. Moreover, there is an urgent need for the government to promote industrial upgrades and for universities and research institutions to find channels for technology transfer. In summary, the construction of the Guangzhou Industrial Design Service AI agents Platform should focus on enhancing the efficiency of industrial design services, integrating the city's advantageous industrial resources and data, and driving the transformation of industrial design services towards intelligence, collaboration, platformization, and ecological integration. This platform aims to provide "one-stop" full-chain services and act as an intelligent coordination hub connecting government, industry, academia, research, and application, while achieving the sharing of intelligent industrial design tools and resources.

Figure 1. Word cloud of problems collected in Guangzhou

3.3. Functional positioning of the AI agent platform for Guangzhou industrial design services

Based on the analysis of demand research, the Guangzhou Industrial Design Service AI Platform is designed to serve the industrial design industry in Guangzhou. It integrates information display, resource integration, online collaboration, technology transfer matching, data storage, and intelligent management into a comprehensive service platform for industrial design. By building this intelligent platform, it aims to provide Guangzhou's industrial design sector with an intelligent service hub that offers "full-process empowerment + ecological connection", enabling precise design requirement analysis, intelligent design generation, dynamic resource scheduling, and automated process closure. Additionally, by integrating the industrial design knowledge base, supply chain data, and industry-university-research resources, it connects the entire service chain from idea incubation to production implementation. The core functions focus on three main modules and dimensions: creating an intelligent toolset and resource sharing network for industrial design companies, providing agile and innovative' one-stop' intelligent design solutions for manufacturing and service enterprises, and building a data-driven collaborative innovation center for the regional industrial ecosystem.

3.4. Information architecture of the AI agent platform for Guangzhou industrial design services

Based on the above functional positioning, the information architecture of the Guangzhou industrial design service platform is designed. The information architecture is a critical component of software product design, aiming to clearly present the framework structure, hierarchical relationships, and internal logic of the product. Therefore, before designing and developing the interactive interface of the Guangzhou industrial design service AI agent platform. It is essential to systematically organize its functional modules, content organization, interaction logic, and hierarchical structure, forming a clear information architecture plan. By leveraging the characteristics of the software product, the information architecture diagram shown in **Figure 2** is created using XMind software. The primary directories include home, chat, working platform, people, and individual. The homepage primarily displays information and data related to Guangzhou industrial design services, design industry news, key professionals in the design field, design cases, and recent recommendations for industrial design activities. The dialogue button facilitates professional human-computer interaction in the industrial design field, such as consulting on industrial design solutions, service processes, and quotations. The working platform, which includes multiple AI agents, serves as the main area for conducting work.

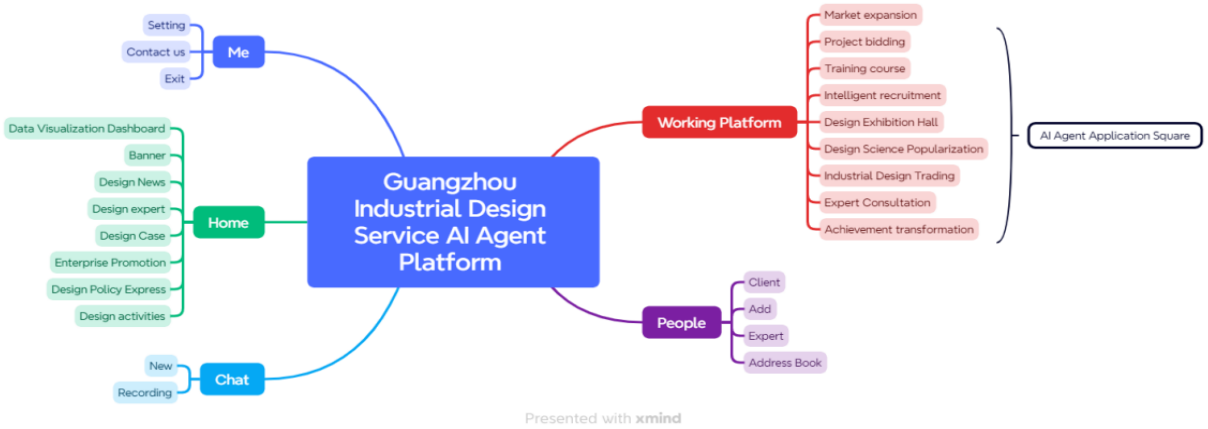

Figure 2. Information architecture of the platform for industrial design services in Guangzhou

4. Design practice of AI agent platform for industrial design services in Guangzhou

4.1. Visual identification system design

4.1.1. Name of the AI agent platform

Considering the unique characteristics of Guangzhou and the positioning of the intelligent platform, the Chinese name for the Guangzhou industrial design service AI agent platform is "SuiZhi GongChuang." Here, "Sui" stands for Guangzhou, "Zhi" means intelligence and wisdom, and "GongChuang" represents design innovation in the industrial circle. The English name is IDesignAI, which combines "Industrial Design" and "Artificial Intelligence", symbolizing the goal of achieving intelligent industrial design.

4.1.2. Visual design of the AI agent platform

The logo is a crucial component of the visual identity system design [9]. Considering the unique characteristics of Guangzhou and the positioning of the intelligent entity platform, the logo, as shown in **Figure 3**, is designed using flat and metaphorical design principles. The logo resembles the characters for "Guangzhou" and an intelligent robot, and its color palette, featuring a tech blue, highlights the technological and futuristic nature of the intelligent entity platform.

Figure 3. Logo design

4.1.3. Digital human design

With the rapid advancement of digital technology, virtual spaces and user immersion can offer users more informative, engaging, and enjoyable experiences [10]. The design of the digital human aims to create a highly anthropomorphic, professional, and intelligent virtual character for the Guangzhou Industrial Design Service AI agent Platform (**Figure 4**). This digital human features a modern minimalist visual style, blending the professionalism of industrial design with cutting-edge technological elements, making it both approachable

and professional. Its core design focuses on deeply integrating into the platform's extensive industrial design knowledge base, featuring strong semantic understanding and natural dialogue capabilities. It can accurately address users' professional inquiries about design policies, resource connections, technology transfer, and process guidance. Through multimodal interaction, the digital human provides round-the-clock instant responses, effectively enhancing the platform's service efficiency and user experience, and serves as an intelligent and visual service hub that connects enterprises with design resources and drives design innovation.

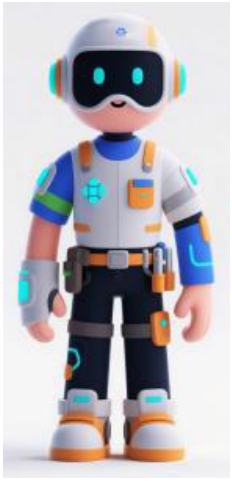

Figure 4. Digital human image design

4.2. Visual design of AI agent platform interface for Guangzhou industrial design services

Based on functional positioning and information architecture, and incorporating principles of Gestalt psychology and cognitive psychology, the interaction interface content of the Guangzhou Industrial Design Service Intelligent Platform is organized and designed according to layout and design standards. A flat design style is adopted, with a user experience at the core, to create the visual effects of the platform's interaction interface. The visual effects of the PC end interface are shown in **Figure 5**. The mobile end interfaces for "Dialogue" and "Workbench" are illustrated in **Figure 6**.

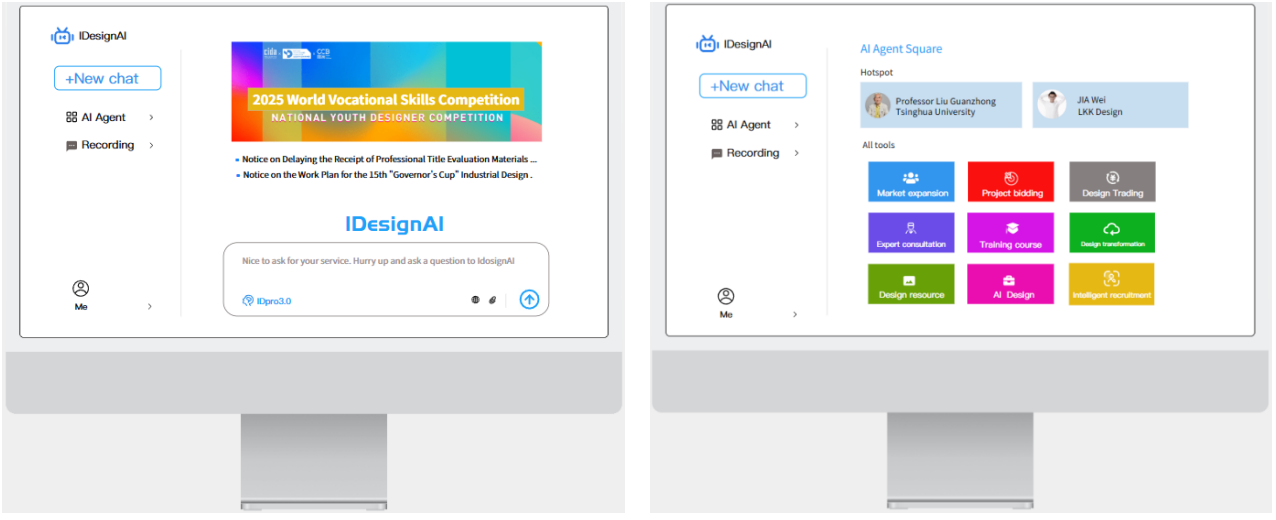

Figure 5. PC interface design

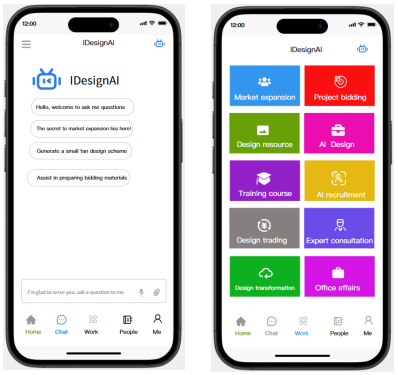

Figure 6. Mobile terminal interface design

5. Conclusion

This study aims to address the numerous challenges facing the high-quality development of industrial design in Guangzhou and promote the transformation of the industrial design service platform towards a service-oriented and intelligent platform. This study proposes the construction of an intelligent platform for industrial design services in Guangzhou. This platform will integrate personal industry insights and practical experience, with an innovative design of its user interface. By exploring a new paradigm of intelligent services across the entire industrial design chain, the platform aims to integrate industrial design resources, enhance service efficiency, optimize labor costs, and expand service coverage through AI agents. This not only provides new ideas and solutions for the high-quality development of the industrial design industry in Guangzhou but also offers valuable "Guangzhou solutions" for the intelligent transformation of industrial design nationwide and globally. However, despite the significant advantages and broad prospects of AI agents in the vertical field of industrial design, they face several challenges. On one hand, there is a need to continuously deepen the training and development of large models in the industrial design vertical, as well as to develop more specialized service agents tailored to specific industrial design scenarios, such as design proposal generation, intelligent optimization of product structure, and intelligent CMF design and evaluation. On the other hand, while large models and AI agents excel in simulating the behavior of industrial designers in real-world scenarios, they still need improvement in understanding human thought processes and emotional engagement. Therefore, the construction of an AI agent platform based on large AI models still needs further exploration and innovation.

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Disclosure statement

The authors declare no conflict of interest.

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