

Artificial Intelligence to Assist Urban Planning

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Abstract: The application of artificial intelligence in urban planning is an iconic change of the era of urban planning. Great changes brought about by urban planning. The author uses his working group to provide practical examples of applications such as intelligent data capture, urban function intelligent configuration, and urban form intelligent design, etc., and has explained the advanced state of artificial intelligence to assist urban planning.

1. Introduction

In July 2017, the State Council issued the "New Generation Artificial Intelligence Development Plan", which proposes three-step strategic goals: The first step is to synchronize the overall artificial intelligence technology and application with the world's advanced level by 2020, and the artificial intelligence industry has become a new important economy. The growth point, the application of artificial intelligence technology has become a new way to improve people's livelihood, and strongly supports China's goal of entering the ranks of innovative countries and achieving a well-off society in an all-round way.

The second step is to achieve a major breakthrough in the basic theory of artificial intelligence by 2015. Some technologies and applications have reached world-leading levels, artificial intelligence has become the main driving force for China's industrial upgrading and economic transformation, and positive progress has been made in the construction of a smart society.

The third step is to achieve world-leading artificial intelligence theories, technologies, and applications by 2030. Level, becoming the world's major artificial intelligence innovation center. In the field of urban construction, the "New Generation of Artificial Intelligence Development Planning" specifically refers to the use of artificial intelligence to "advance urban planning, construction, management, and operation of the entire life cycle of intellectualization ..." and so on.

The theory of pluralism is mostly used in urban governance. It emphasizes the allocation of rights and resource sharing in the process of governance by plural subjects. The two single-center institutional arrangements that deal with centralized and decentralized systems are faced with an unresolvable problem: Let the chaos be a dilemma. In community governance, the participation and cooperation of multiple subjects is even more necessary. This is because most of the community's public affairs are closely related to residents' lives. Therefore, it requires the extensive participation and active cooperation of residents, and social organizations are dealing with In terms of community public affairs, they have greater advantages than the government and the market, so they have been favored by reformers.

Chen Weidong pointed out that the nature of community public goods determines that the supply of community public goods requires the establishment of a multi-dimensional interactive cooperation mechanism. Gao Hong believes that each governance subject can enhance understanding through dialogue and give play to their own resource advantages, so as to achieve good cooperative management. Gui Yong put forward the "spatial differentiation of functional structure". This spatial differentiation of functional structures is also a prerequisite for participation and cooperation. Xia Jianzhong put forward the idea of establishing a community management system of commercial housing in line with the principles of a socialist market economy, actively supporting and cultivating the ability of residents to democratic self-government, and improving the basic democratic self-government system. After investigating the Wenzhou Chamber of Commerce, Yu Jianxing put forward the concept of "Chinese Civil Society Growing in Participation", thereby

raising the concept of participation and cooperative governance to a higher academic level.

2. The Entry Point of Artificial Intelligence to Assist Urban Planning

Both ergonomics and China's urban planning discipline are currently in their infancy, and the prospects for their interaction in the development process are particularly important in the following three points.

The maturity of urban planning science is based on the three cornerstones of urban planning's ideology, theory, technology, and history of science development. □The advent of the era of big data has caused urban research and urban planning to be affected and impacted like never before. □These attacks have challenged traditional urban research and planning methods on the one hand, and "wisdom in the cloud" on the other.□

The innovation of the community governance model also requires a change in the role and functions of the government. This is the prerequisite for the reform of the management system at the grass-roots level, and it is also a guarantee for achieving the goal of community autonomy. Zheng Yongnian pointed out that the objective reality of Chinese politics and the nature of political power during the transition period determine that state power will always live with us. It can be seen that the government has always been the leading force in community construction, which is also related to the function of the government in the community.

Xu Yong believes that the government's intervention has played a role in making up for the lack of social autonomy. Community autonomy in community construction has strong government planning. Therefore, with the increasing development of community construction, the role and function of government must be changed accordingly. Mao Shoulong pointed out that the process of the government's comprehensive governance reform is the result of comprehensive and systematic advancement at the macro level, and it is also the result of the innovation, accumulation and promotion of macro change in specific aspects of public management. Scholars have their own opinions on the thinking and practice of the transformation of government functions.

Mao Shoulong pointed out that the process of the government's comprehensive governance reform is the result of comprehensive and systematic advancement at the macro level, and it is also the result of the innovation, accumulation, and promotion of macro change in specific aspects of public management. Regarding the thinking and practice of the transformation of government functions, scholars have different opinions. Zhang Mingliang pointed out that the core of correctly handling the relationship between government organizations and autonomous organizations is to solve the problems of simplifying administration and decentralization and shifting the focus.

Wang Lefu put forward the viewpoint of the socialization of Chinese government functions. Cui Yunwu believes that the government-led community construction must aim at promoting the self-management model of the grass-roots masses and constituting a new way of government social management. Pan Xiaojuan believes that the government's main task in community service is to create the environment and provide conditions instead of directly participating in the provision of community services. Yu Yanyan believes that the government's role in community services mainly includes the formulation of community service policies, the formulation of community service goals, the promotion of citizens' participation in community services, the establishment of community service partnerships, and the role of community service responsibilities. Therefore, it is necessary to abandon the concept of "almighty government" and clarify the limits of the role of government in community construction. Reform the current community public administration system and build an institutional platform for community residents to participate autonomously.

We must realize that human intelligence technology is still in its infancy, and it is a rapidly

□ NamT, Pardo T A. Conceptualizing smart city with dimensions of technology, people, and institutions [C] . Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times, 2011. 282-291.

□ Abdoullaev A. Keynote: "A smart world: a development model for intelligent cities" [C] . The 11th IEEE International Conference on Computer and Information Technology (CIT), 2011.

□ Dempsey N. Future forms and design for sustainable cities [M] . GB R: Architectural Press, 2005.

expanding and unstable technology. The surpassing of the first-generation technology marked by stand-alone machine learning and deep learning in the scientific and technological circles, especially in the ergonomics circles, is being vigorously pushed forward. The next generation of ergonomics, namely ergonomics 2. The major technological breakthrough of 0 will occur in the foreseeable future.

China's "New Generation Artificial Intelligence Development Planning and Major Scientific and Technological Projects", which was launched in November 2017, indicates that in the next 5 years, AI-assisted urban planning technology will rely on the birth of a new generation of artificial intelligence technology, and it has been greatly improved, and has brought great possibilities for the next urban planning technology reform, and even brought about changes in the thinking and methods of urban planning.

3. Interaction between Human Intelligence and Urban Planning

Urban research and urban planning practices provide a huge application platform and development ideas for the research and development of artificial intelligence. The New Urban Agenda released by the 2016 Habitat III Conference emphasizes the scientific and synergistic role of urban planning and redefines its role in urban development. An important position in many aspects of sustainable development. The thinking method and decision-making model of urban planning provide future directions for machine learning for ergonomic development. The operational mode of planning has become one of the main avenues for the next generation of ergonomic technologies. The operation of planning is a highly intelligent operation. Human intelligence can analyze and learn from the complex system of the plan, and then promote human intelligence technology to improve the complex intelligence of planning, construction, and management operations.

So far, the application of human intelligent technology in urban planning has mainly focused on machine learning (ML) and in-depth learning (DL) on the laws of urban growth and urban space. Due to the complexity of the city, the research and exploration of the largest complex life created by this human being on the earth has hindered the scientific development of its planning discipline because of its complexity.[□] Artificial intelligence has risen around the world, especially in China. Urban planning and artificial intelligence have been the best combination rare in the global planning academia. Although the use of artificial intelligence technology in China's urban planning disciplines is preliminary from a long-term historical perspective, it is a front-runner from a global perspective. Human intelligence is mainly used for large-scale mining of urban data, and it has greatly improved China's urban planning community's understanding of the laws of urban growth and space in the world. The author and the working group have completed satellite image excavations in built-up areas of more than 10,000 global cities, and have shown a large number of urban spatial growth typologies.

In the future, urban planning will rely on the development of new generations of artificial intelligence technology to develop new technological possibilities for urban perception, urban awareness, urban analysis, urban simulation, and urban decision-making. The following points out the possibility of the development of artificial intelligence technology in the field of urban planning in the future from three aspects.

First, the next-generation group physical and mental technology of artificial intelligence can be applied to urban development management on a large scale. Because the urban planner's working model has never been a stand-alone operation, the planning results are almost always group-wise. The formulation of a plan requires the wisdom and cooperation of the team. The next generation of group intelligence fits this feature very well and will support the planning to produce a strong and effective group operation model in a timely manner.

Second, artificial intelligence's next-generation multimedia intelligence technology can comprehensively use and coordinate cognition of information and data from satellite films, aerial

[□] Landry C, Bianchini F. The creative city [M]. Demos, 1995.

films, statistical data, ground perception, interviews, and field surveys. □And jointly support decision-making. Leadership speeches in planning decisions can also be easily incorporated into the analysis system of urban planning information through multimedia human intelligence. Speeches from all parties will be quickly analyzed, decomposed, and aggregated into the city's large database.

Third, the next generation of human-computer intelligent technology of human intelligence can integrate the technical knowledge of urban planning, the machine learning technology of rational learning, and the machine human intelligence with the human decision-making system to achieve the optimal combination of decision-making intention and machine rationality.

The theory of "civic governance" was proposed by American scholar Professor Box, who believes that the 21st century will be an era of citizen governance. This new model of governance is based on citizens, citizens (legislators) and administrative professionals Public servants).

The theory of civil society puts civil rights, social rights and state rights on the same level and thinks, thus building a new type of state-society relationship. Community, as a subspace of society, can be said to be a microcosm of society. Using civil society theory as one of the guiding theories of community governance model can not only verify the guidance and applicability of the theory to practice, but also enrich the practice of theory. Scalability and extensibility. Xu Yong pointed out that the greatest possibility of citizen participation comes from the social level, and the way is to implement autonomy in a certain area.

This view of combining civil society theory with community governance is also reflected in other similar literature. Zhang Minjie pointed out that contemporary Chinese urban community organizations present a state of coexistence, blending, and interaction between nationality and society. The coexistence of nationality and society and nationality is stronger than sociality is the reality of Chinese society today. Ding Yuanzhu believes that community is one of the forms and manifestations of civil society. It connects individuals together to meet their needs for survival and development by participating in community affairs and serving the community. Ma Baocheng pointed out that a new development trend of local governance; the coordinated development of grassroots state power and social forces is taking shape. Li Zizi put forward reflection after sorting out her own research in this area. She believes that the existing research lacks reflection on theory, especially on the power boundary in the state-society interaction, the mechanism of state-society interaction, and the state-society mutual empowerment The theoretical issues such as the conditions of rights are still lacking in-depth discussion. Although this research orientation is in line with the development trend of social pluralism and democratization, it uses the division between the state and the civil society as a self-evident prerequisite. The underlying primary problem is that it is based on the concepts of western civil society and the state. Make due judgments on Chinese society.

Artificial intelligence technology is being promoted on a large scale, and the technological progress of the artificial intelligence discipline 5 years later is a special need for future urban planning. What we should learn now is not only how to apply ergonomics directly, but also how ergonomics can serve urban planning more and serve urban science and healthy development. Adhering to the application of human intelligence in the field of urban planning is an important technical means for China's urban planning to follow, run, and lead the world in the world of planning. It is also an endogenous force for future innovation to lead inclusive development.

4. Conclusion

Only when cities are respected as independent living objects and professional objects of urban planning can city planning respect the complex laws of life and seek the ecological rationality of complex lives. In the process, along with the continuous introduction of artificial intelligence, the rapid development and improvement of artificial intelligence itself, and the continuous introduction of artificial intelligence into the process of urban law learning and decision-making in urban

□ Hospers G J. Governance in innovative cities and the importance of branding [J] . Innovation, 2008, 10 (2-3) : 224-234.

planning, urban planning will become stronger. □ There are huge development differences in artificial intelligence-assisted urban research and urban planning across China. Practical committees such as the Urban Planning New Technology Academic Committee, local urban planning front-line management agencies, and the Urban Planning Bureau Information Center are required. The hospital, the planning and design team, and each planner discover the problems of the planning itself from the practice of planning, and are problem-oriented and continuously absorb the development results of new artificial intelligence technologies.

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