Algorithm Analysis of Public Service Accessibility

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Abstract. In order to maximize the value of various public service data resources under certain computing resources, it is necessary to develop public service algorithms for various application scenarios of public services, so as to realize intelligent computing and service engine from various public service data to corresponding scenario applications. The public service algorithm center is similar to the algorithm "shelf", which has the characteristics of modular and plug-in deployment. It can be called by scenario application development in the form of API interface or dynamic library (.Lib). It can not only run on the cloud computing platform, but also be deployed to other business systems. It also can connect existing resources, including basic platforms, business systems, data center or other development tools. Each algorithm module can also be interconnected to form a new integrated algorithm. In the future, combined with the accumulation of large-scale public service algorithms and public service knowledge map resources, based on the deep learning and automatic algorithm generation ability, a new generation of self-generating brain core of multimodal algorithms facing new scene problems can be formed, and at the same time, the limited precise call scheduling of computing quantity and the limited precise borrowing of computing power can be realized.

Keywords: Public service · Accessibility · Algorithm analysis · Deep learning

1 Introduction

With the construction of digital government, urban big data is growing exponentially. Under the condition of certain computing power (Cloud Computing), how to flexibly play the growing value of public service data assets and efficiently meet the intelligent application needs of government decision-making, social governance and public services, in which algorithm innovation and application will play a key role. The public service algorithm center will be an intelligent hub. Public service algorithm refers to a set of instructions composed of a series of professional disposal rules corresponding to specific service scenarios. With the help of these set type operation rules, as long as there is a certain amount of data input and conditions, certain analysis results, discrimination results, action countermeasures and prediction and early warning information can be

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formed. It can support high-quality decision-making and decision execution tracking and the "data analysis - decision command - action tracking - public opinion attention integration" mechanism. Artificial intelligence as one of the bases of digital technology, especially intelligent algorithms, is considered to be one of the important contents of the construction of digital government, and is the key to promote the development of digital government from the "data" stage to the "intelligent" stage (Digital Government 3.0). Artificial intelligence includes three elements: algorithm, computing power and computing quantity (data), which are indispensable. In the field of public services, subject to personal privacy, data management, social systems and other factors, the convergence and opening of data are difficult, and the innovative application of public service algorithms seems to be a little inferior. To this end, increasing the innovative application of algorithms and vigorously developing the algorithm industry has become one of the important issues in the construction of digital governments in various regions. In the context of urban digital transformation, the development of digital economy, digital governance and digital life will create a huge market and many scenes for the intelligent application of urban big data, providing unprecedented opportunities for the innovative development of public service algorithms. In the process of algorithm application, data access does not require data convergence, but only provides data access interface. As long as the relevant business data is accessible, conditionally accessible under the specified authorization, and can be used throughout, the normalized distributed storage can be used, thus reducing the cost of data collection and construction [1]. For the sharing and exchange of similar data, under the guarantee of certain management norms and access mechanisms, the algorithm module can also realize cross region and cross system access, query and sharing calls, and can make personalized adjustments according to the actual situation of the scene. For the same problem scenario in the same public service field in different places, as long as the local scenario data is input, the corresponding output results can be calculated, which greatly expands the shared value of the public service algorithm center [4]. Thus, a city can jointly build and share a public service algorithm center, and even different cities can jointly build and share a public service algorithm center, which gathers algorithm modules of different subdivision problem scenarios in different service fields, and enables the application of similar problem scenarios in different regions. It is conceivable that in the future, for each subdivision problem scenario under the same application in the public service field, a sharable public service algorithm center only needs to be built in a region or even nationwide, so that the data value of different regions can be fully mined to enable the intelligent application of problem scenarios in different regions, which will help to save the cost of computing power. It also helps to quickly promote the innovative application of public service algorithms and expand the application value of algorithm innovation technology.

2 Construction of Public Service Accessibility Algorithm Center

The main content of the public service algorithm center is a set of vertical application algorithms for fine-grained problem scenarios of applications in the public service field. With the continuous solution of scene problems, the algorithm set is a process of continuous accumulation and iterative optimization. It also means that the construction

Scenario application	Public security application	Tax application	Civil affairs application	—	Hotline
	Scenario problem 1K	Scenario question 21	Scenario problem 3M		Scenario problem JP
	——	——	——		——
	Scenario question 12	Scenario question 22	Scenario question 32		Scenario question J2
	Scenario question 11	Scenario question 21	Scenario question 31		Scenario question J1
Government algorithm Center	Public security algorithm library	Tax algorithm library	Civil Affairs algorithm library	—	Public security algorithm library
	——	——	——		——
	Algorithm module 1K	Algorithm module 21	Algorithm module 3M		Algorithm module JP
	Algorithm module 12	Algorithm module 22	Algorithm module 32		Algorithm module J2
	Algorithm module 11	Algorithm module 21	Algorithm module 31		Algorithm module J1
Big data center	Public Security Business Library	Tax business library	Civil Affairs Business Library	—	Hotline service Library

Fig. 1. Conceptual diagram of public service algorithm Center

of public service algorithm center is a gradual, continuous and dynamic optimization process. The formation of public service algorithm is often due to some public service matters or situational problems that need to be handled at the beginning. These problems have certain commonalities, and also form certain trace materials, relevant information and data. Therefore, combined with the past experience and best practices in dealing with such problems, we can refine and develop preliminary algorithm logic, and then form a model or mode to conduct corresponding analysis and operation. On the basis of analysis and operation, the accuracy of the algorithm can be improved through data training. Once the algorithm module is formed, the corresponding algorithm calculation results can be formed under the specified data input (Fig. 1).

At present, the majority of public service algorithms are synthetic algorithms. For example, urban transportation, the comprehensive application algorithms such as analysis, prediction and Application on the time dimension or regional dimension of the overall overview of urban transportation are in the majority, while the "portrait" applied to fine-grained scenes such as special holidays, special time periods, major events, key places, key road sections, vehicle types, pedestrian flow characteristics, traffic management resource allocation and so on is not enough. In fact, applications in each public service field can be further subdivided into many application scenarios. Because the algorithm is aimed at the most specific segmentation problem scenario and its original data, it will be more valuable to deeply subdivide the categories of each application. For example, referring to the appeal classification of 12345 citizen hotline or government hotline, the government affairs problem scene can be divided into about 1500 sub categories (in the case of level 5 and level 6), which means that the appeal of citizen hotline

<table>
<tr><td colspan="7">Synthesis algorithm</td></tr>
<tr><td colspan="2">IA1</td><td colspan="3">IA2</td><td colspan="2">IA3</td></tr>
<tr><td colspan="2">IA4</td><td colspan="2">IA5</td><td colspan="2">IA6</td><td>IA7</td></tr>
<tr><td>VA1</td><td>VA1’</td><td>VA1”</td><td rowspan="2">Vertical algorithm</td><td>VA3</td><td>VA3’</td><td>VA3”</td></tr>
<tr><td>VA2</td><td>VA2’</td><td>VA2”</td><td>VA4</td><td>VA4’</td><td>VA4”</td></tr>
<tr><td colspan="4">Foreground vertical algorithm</td><td colspan="3">Background vertical algorithm</td></tr>
<tr><td>FA1</td><td>FA1’</td><td>FA1”</td><td>FA1”’</td><td>BA1</td><td>BA1’</td><td>BA1”</td></tr>
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Fig. 2. Construction of public service algorithm center

can be divided into no less than 1500 algorithms and algorithm sets; Referring to the 12366 classification of consultation and complaint appeals, the tax problem scenarios can be divided into about 300 sub categories (about 400 considering social security payment), which means that no less than 400 tax algorithms and algorithm sets can be formed for tax hotline appeals; The main work items for the online and offline tax affairs hall are close to 250, and about 150 tax violations and violations are investigated and dealt with; There are nearly 1000 sub categories for 110 alarm hotline appeals; The demands of online and offline service halls are close to 2000 main items; For grid matters, nearly 1000 sub categories; There are nearly 500 sub categories of community service reflection items… Each key information and data source may have hundreds of thousands of problem scenarios, and each scenario requires one or more algorithms. Through the specific “portrait” of each scene, we can achieve precise governance and efficient disposal. According to incomplete calculation, the minimum granular service scenarios in a city will reach about 50000. Each fine particle problem scenario requires one or more algorithms, and the total number of algorithms in a city will reach more than 50000. Different from the comprehensive algorithm, the algorithm for different application scenarios with finer particles is the aforementioned vertical application algorithm. In terms of public services in a city, the vertical application algorithm capacity of the government algorithm center will reach more than 50000 (Fig. 2).

IA stands for integrated algorithm, VA stands for vertical algorithm, FA stands for foreground vertical algorithm, BA stands for background technical algorithm.

3 Common Algorithms for Public Service Accessibility

3.1 Multi-objective Genetic Algorithm Based on Pareto Sorting

Pareto proposed the concept of Pareto dominance in 1986, which is defined as: assuming that the two solutions I1 and I2, I1 is better than I2 for all goals, then we call I1 dominating I2. If I1 is not dominated by other solutions, I1 is called Pareto solution. The set of Pareto solutions is called Pareto front. The front should be submitted to manual solution. The multi-objective genetic algorithm based on Pareto sorting is dedicated to solving Pareto front. Multi objective genetic algorithm (MOGA), non-dominated sorting genetic algorithm (NSGA) and improved non dominated sorting genetic algorithm (NSGA-II) are commonly used multi-objective genetic algorithms based on Pareto sorting. The multi-objective genetic algorithm based on Pareto sorting should first solve the problem of fitness function design. Fitness (I) = 1 + NQ (I), where NQ (I) represents the number of individuals dominated by individual I. NSGA and NSGA-II adopt another method to calculate the fitness function. There is another key point of multi-objective genetic algorithm based on Pareto sorting: we are looking for a set of Pareto solutions, not a Pareto solution, so we need to encourage diversity. Different algorithms have different means to encourage diversity. The diversity method adopted by MOGA and NSGA is called fitness sharing. Fitness sharing method calculates the distance between different individuals.

3.2 SA Algorithm

The earliest idea of simulated annealing (SA) was proposed by N. metropolis and others in 1953. In 1983, S. Kirkpatrick and others successfully introduced the idea of annealing into the field of combinatorial optimization. It is a random optimization algorithm based on Monte Carlo iterative solution strategy. Its starting point is based on the similarity between the annealing process of solid matter in physics and general combinatorial optimization problems. Starting from a higher initial temperature, with the continuous decline of temperature parameters, combined with the real multi-objective optimization should solve Pareto front, and the solution selected in Pareto probability jump characteristics, the simulated annealing algorithm randomly finds the global optimal solution of the objective function in the solution space, that is, the local optimal solution can jump out of probability and eventually tend to the global optimal solution.

Simulated annealing algorithm is a general optimization algorithm. Theoretically, the algorithm has the global optimization performance of probability. At present, it has been widely used in engineering, such as VLSI, production scheduling, control engineering, machine learning, neural network, signal processing fields. Simulated annealing algorithm is an optimization algorithm of serial structure, which can effectively avoid falling into local minima and eventually tend to global optimization by giving the search process a time-varying probability jump that eventually tends to zero.

The generation and acceptance of the new solution of simulated annealing algorithm can be divided into the following four steps: the first step is to generate a new solution in the solution space from the current solution by a generation function; In order to facilitate the subsequent calculation and acceptance and reduce the time-consuming

of the algorithm, the method that the current new solution can be generated by simple transformation is usually selected, such as the replacement and exchange of all or part of the elements constituting the new solution. It is noted that the transformation method that generates the new solution determines the neighborhood structure of the current new solution, which has a certain impact on the selection of the cooling schedule. The second step is to calculate the objective function difference corresponding to the new solution. Because the objective function difference is only generated by the transformation part, it is best to calculate the objective function difference in increments. Facts show that for most applications, this is the fastest way to calculate the difference of the objective function. The third step is to judge whether the new solution is accepted. The basis of judgment is an acceptance criterion. The most commonly used acceptance criterion is the Metropolis criterion: ifΔIf $t < 0$, accept s' as the new current solution s, otherwise take the probability exp (-ΔT/t) accept s' as the new current solution s. Fourth, when the new solution is confirmed to be accepted, the new solution is used to replace the current solution, which only needs to realize the transformation part of the current solution corresponding to the generation of the new solution, and modify the value of the objective function at the same time. At this time, the current solution realizes an iteration. On this basis, the next round of tests can be started. When the new solution is determined to be abandoned, the next round of test will be continued on the basis of the original current solution. The simulated annealing algorithm is independent of the initial value, and the solution obtained by the algorithm is independent of the initial solution states (which is the starting point of the algorithm iteration); Simulated annealing algorithm has asymptotic convergence, which has been proved to be a global optimization algorithm with probability l converging to the global optimal solution in theory; Simulated annealing algorithm has parallelism.

3.3 Clustering Algorithm

The UK Quality Supervision Committee has not published the meta-algorithm of its intelligent rating system, but according to the description, it may be the easiest K-means clustering algorithm to operate, because only this kind of algorithm can provide a reasonable explanation for the risk assessment results of the quality supervision committee and ensure that the intelligent rating system conforms to the data ethics framework implemented by the UK government. The purpose of K-means clustering algorithm is to minimize the cluster inertia factor. It uses machine learning model to identify the potential structure or pattern in big data, so that the elements of the same cluster or group are more similar to each other than those from different clusters or groups, so as to highlight the risk indicators with higher responsiveness. In business, K-means clustering algorithm is often used to identify consumer behavior patterns, and patients are also consumers in medical services. Following this idea, the regulatory authorities can find the best centroid of different kinds of diseases based on the medical database, so as to determine the cluster category of patient samples, allocate patient data to each category by using the square Euclidean distance, and repeat the initialization process many times to solve the problem that non convex functions are difficult to converge to local optima. However, the recognition effect of K-means clustering algorithm on non-spherical groups is not good, and it is difficult to apply to the algorithm governance in the

field of public health in China. The existing quantifiable indicators in China's medical database mainly come from the filling and reporting of hospitals. Although the regulatory authorities have audit authority, they do not have the ability to verify one by one on the spot, resulting in opportunistic behaviors such as false reporting and concealment. To make an inappropriate analogy, the granaries in various places have reported to the central government over the years that they have sufficient stocks and no worries about rice noodles. Why do they often "burn even the camp" as soon as they carry out a major inventory and the inspection team is stationed?

3.4 C4. 5 Classification Algorithm

Compared with clustering algorithm, classification algorithm can better solve the problem of group recognition without sacrificing the interpretability of the algorithm. The most widely used classification algorithm is c45 algorithm, which is extended from ID3 algorithm. C4 The algorithm can be used to assign multiple indicators with multidimensional characteristics to different categories, and label the categories of indicators with multiple attributes in the way of "projection". The process of classification can be regarded as a "decision tree", which forks by selecting different attributes each time. For example, in hospital risk assessment, an attribute set reflecting various risk indicators can be established respectively, a = {practicing according to law, medical safety, practicing in good faith, professional ethics construction, major events, mandatory tasks, public health emergencies, pathological indicators}, and a category set l = {improving risk rating, reducing risk rating, maintaining rating, and ordering rectification}, The finer the classification of attribute and category sets, the higher the complexity of the model. C4The first step of the algorithm is to calculate the information entropy of each attribute and category respectively, that is, the sum of the possible uncertainties of each attribute and category. The larger the value of information entropy, the more impure the sample of the attribute or category, and the greater the amount of information required to clarify the data. The second step is to calculate the information gain and determine the characteristic index. Information gain is the difference between category information entropy and attribute information entropy, which reflects the degree of information uncertainty reduction. The greater the gain of an attribute information, it shows that using this attribute to divide samples can better reduce uncertainty. In this step, the algorithm model makes its own judgment and choice on the available indicators in hospital risk assessment, and some indicators are eliminated or maintained in a "meaningful silence" state. The third step is to calculate the split information measurement of attributes, that is, each attribute "goes up the tree" and starts the process of bifurcation. According to the size of the data volume and the data collection cycle, different attributes have different quantities and sizes. This information is the internal information of attributes [5]. The ratio of information gain to intrinsic information is the information gain rate, which reflects that the importance of attributes decreases with the increase of intrinsic information. The algorithm model will screen out the index with the highest information gain rate as the "leaf node", and use the "impure" node to continue to split, just like building a tree, to complete the absorption and accumulation of various risk indicators, and then fulfill the commitment of reasonable classification.

4 Practical Application of Public Service Accessibility

4.1 Public Bicycle Service Optimization System

For example, Luo Yunfang and pan Zekai took the vehicle borrowing and returning data of each station within a specific time period provided by a city public bicycle management center as the research sample, introduced a controller based on fuzzy algorithm, and established an optimization evaluation system using fuzzy mathematical model to evaluate the rationality of station selection from the factors such as the demand for station locking piles, the number of self-driving vehicles, the convenience of citizens and construction costs. In terms of the demand for bicycles at stations, taking the traffic flow (1 h) at stations per unit time as the main factor, a linear programming model is established to obtain the optimal solution, that is, the number of locking piles at stations is equal to the sum of the number of cars that can be borrowed and the number of parking. At the same time, combined with the limitation of the maximum number of locking piles, determine the number of locking piles required for each station, use MATLAB software to fit the data and further optimize the model, so as to establish a mathematical model of public bicycle service optimization evaluation parameters, which provides a strong basis for the effective evaluation of station construction.

4.1.1 Design of Fuzzy Algorithm Controller

In solving, we often encounter practical problems that can only get fuzzy solutions. It is more scientific and reasonable to solve the problem that can only be solved by fuzzy reasoning logic. Fuzzy reasoning is the process of solving possible fuzzy conclusions based on known fuzzy conditions and fuzzy rule base. Fuzzy controller is realized by using fuzzy theory. It has good performance in dealing with complex objects such as nonlinear and no accurate model. The structure of the fuzzy control system is shown in Fig. 3. Among them, Ke, KEC and Ku are the quantization factors of E, EC and u respectively.

The fuzzy controller is composed of two input variables and two output variables. Combined with the data characteristics provided by a city public bicycle management center, before the design of the fuzzy controller, the software is used to remove the divorced value of the original data, and the daily number of borrowed and returned vehicles at each station is counted through data perspective; The cumulative number of cars borrowed and returned at each station is counted, and the distribution of the length of use at each station is counted. On this basis, the pile locking error E and the error change rate EC are assumed input variables, that is, the error E and its differential EC are obtained by comparing the given quantity with the actual demand. The number of cars borrowed and returned is EX1 and ex2 output variables. After fuzzification, the input quantity is transformed into a fuzzy set described by fuzzy control language, and the control rules are activated. After Mamdani fuzzy reasoning, the control table is calculated offline, and finally the actual control quantity is obtained through anti fuzzification. The fuzzy controller is designed and implemented in four steps: the first step is to determine the real-time E and EC; In the second step, the States E and EC after the precise quantities of E and EC are fuzzed are taken as the inputs of the controller;

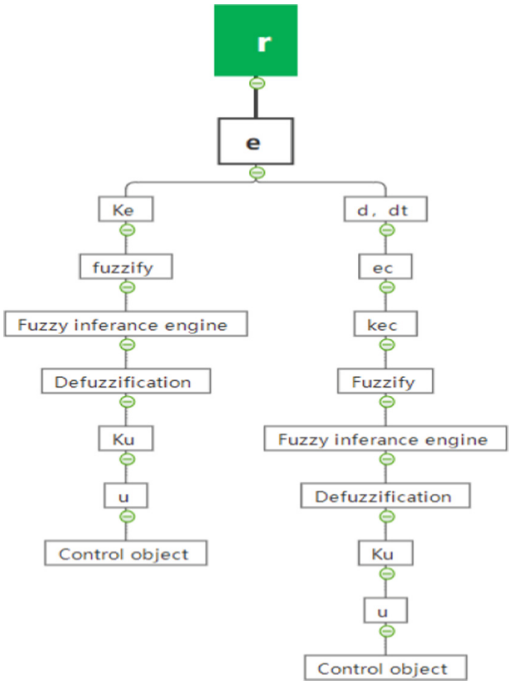

Fig. 3. Fuzzy Control System

The third step is to calculate the control quantity ex by fuzzy rules; The fourth step is to refine the fuzzy control quantity ex and transmit the result u to the control unit. In the fuzzy control theory, the quantitative grade of variables is divided first, and then the membership function of each variable is determined. Each membership function has different meanings. The membership function of fuzzy subset is the reflection of the high-resolution characteristics of fuzzy set, which has high control sensitivity. The membership function of fuzzy set is the reflection of the low-resolution characteristics of fuzzy set, which is characterized by good system stability, The performance is gentle and the control sensitivity is low. For the convenience of calculation, Gaussian membership function is used to represent fuzzy variables E and EC, and triangular membership function is used for output variables EX1 and ex2.

4.1.2 Evaluation System Modelling and Optimization

Using the given fuzzy control system, and under the conditions of quantifying the variables and giving the membership function, using the method of data perspective and Excel VBA program, aiming at the original data provided by a public bicycle management center, the frequency of car borrowing and returning and the peak period of car borrowing and returning at each station are counted, and the stations with common car borrowing and returning peaks are classified, Calculate whether this service system can be optimized in site location selection. Through fuzzy algorithm, the model is comprehensively evaluated, and the rationality of the station is evaluated from the factors

such as the demand for station locking piles, the number of bicycles, the convenience of citizens and the construction cost. In terms of the reasonable allocation of the number of bicycles, the traffic flow per unit time (1 h) at each station is the main consideration. The optimal solution of the model is obtained, that is, the number of locking piles at the station is equal to the sum of the number of cars that can be borrowed and the number of cars that can be parked.

4.1.3 System Simulation

Based on the bicycle borrowing and returning records of a station of a bicycle public service management center in one day, according to the established model II, through the method of curve fitting, the solution algorithm flow is shown in Fig. 4.

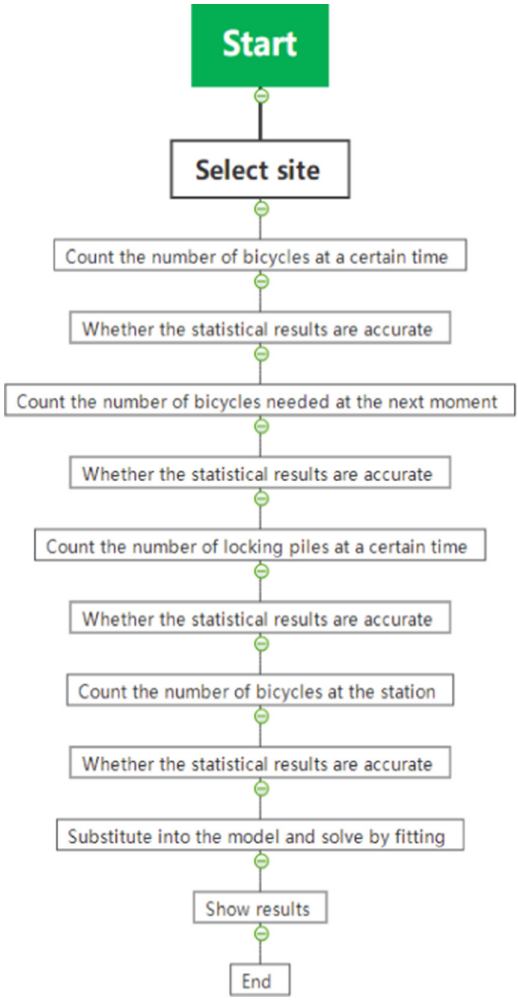

Fig. 4. Algorithm flow of car borrowing and returning

Use MATLAB software to fit and compare the data of the actual number of cars borrowed and returned, and judge the rationality of the station according to the comparison of the actual curve and the fitting curve.

4.2 On Cloud AI of Urban Public Service Cloud

4.2.1 Cloud AI Training Platform

AI has a high degree of attention, and AI learning and training is the basis for the establishment of AI platform, which requires a lot of computing power to complete the calculation. The biggest feature of Shenzhen Urban Public Service cloud built by the national supercomputer Shenzhen Center is that it has endless computing power, and can be deployed in real time to complete the training and learning tasks of any big computing [6]. The computing platform provided by the urban public service cloud can ensure that users of enterprises and institutions can design and use their own algorithms, the algorithm library provided by the platform, and the infrastructure resources of the platform to train their own AI models on the cloud AI platform according to their own business scenarios, and can save the AI models in the cloud or download them locally; Users can also choose to publish the trained AI as a service on the cloud.

4.2.2 Visual Arrangement of AI Business Logic

Users can use the basic algorithms of the cloud AI platform of urban public service cloud and user-defined algorithms to visually arrange the AI training inference process (influence); When the trained model is applied, the reasoning process and business logic can also be arranged. In short, the visual arrangement of business logic and more convenient and intuitive technical services enable everyone to carry out AI training and give full play to their innovative ability.

4.2.3 AI Capability Interface Service

The on-cloud AI platform of urban public service cloud supports the import and processing of enterprise remote data and local data, and provides interfaces to support enterprises to connect their own AI services and capabilities to the cloud platform. It is impossible for any company to obtain all data, so we have interfaces to allow third-party data access. The platform opens cloud AI basic capabilities to users' cloud applications and other data center (off cloud) applications in the form of SDK and API; It enables user applications to utilize platform cloud resources, AI toolsets, frameworks, and algorithm libraries. For many units, when they analyze, the third-party data accessed by the AI platform is very helpful to them. Through the combination of resources, new capabilities useful to users are formed.

4.2.4 Intelligent Modeling of Cloud Development

Intelligent modeling enables cloud users to verify intelligent modeling at every step of development, which can not only reduce subsequent physical problems, but also ensure that suppliers at all levels of the engineering system developed according to

this architecture can provide products that meet the needs of customers. In the cloud software development environment of urban public service cloud, automatic verification can be provided to verify whether the requirements described in natural language have logical bugs. After verification, the business logic in the requirements can be extracted and automatically converted into a design model [2]. Finally, after the design model is verified and passed, the designed model is automatically converted into code to realize business logic.

4.2.5 Work Order Voice Intelligent Input

Whether you speak Cantonese, Sichuan dialect, Henan dialect, northeast dialect, Tianjin dialect, Hunan dialect, Shandong dialect, Hubei dialect, Anhui Dialect, Jiangxi dialect, Southern Fujian dialect, Shaanxi dialect, Jiangsu dialect, Shanxi dialect, or foreign dialect… Shenzhen supercomputing has launched the voice intelligent input function. Combined with the language recognition service in the field of artificial intelligence, the work order service module of Shenzhen Urban Public Service cloud provides a perfect work order language entry function.

Solution	Smart court	Autopilot	Security monitoring	Smart home	Intelligent marketing
AI application services	Man machine dialogue	Business security protection	Real time speech translation	Content review	Customer service quality inspection
	Intelligent appreciation	Digital marketing	Intelligent recommendation	MT	Wechat Xiaoyun customer service
	Face nucleus	Analysis of cultural and intellectual public trends			
AI basic services	Intelligent image processing		Intelligent voice service		natural language processing
	Scene recognition		Speech recognition		Emotional analysis
	Face recognition		Speech synthesis		Parsing
	OCR identification		Voiceprint recognition		lexical analysis
AI platform services	Deep learning platform		Machine learning platform		

Fig. 5. Tencent cloud AI product service matrix

4.3 Tencent di-x Deep Learning Platform

Based on the powerful big data storage and computing capabilities of Tencent cloud, di-x platform is a one-stop deep learning platform integrating development, training, prediction and deployment. It is suitable for image recognition, speech recognition, natural language processing, machine vision and other popular fields. With the opening of di-x platform, Algorithm Engineers and data scientists can focus on model and algorithm tuning without paying attention to the cumbersome details and resource constraints of machine learning, especially the underlying engineering of deep learning. Compared with other deep learning platforms in the industry, di-x platform has many improvements and innovations, and has excellent performance in ease of use, flexibility, compatibility and so on. For example, each deep learning component of di-x is the latest open-source version in the industry, opening up the interaction between different storage systems [3] (Fig. 5).

Taking the "small tail" design of the algorithm as an example, di-x has more advantages in the collection, use, prediction and deployment of models, and is more "friendly" to deep learning. With the help of the di-x platform as a bridge, users can easily build various algorithms for in-depth learning by using the cloud server to accumulate their own data, convert it into model productivity, and connect it to the AI fast lane.

5 Conclusion

The algorithm has two obvious advantages in decision-making: first, it has more accurate or powerful data computing ability; Second, we can consider more factors and find unexpected correlations between these variables. Although the algorithm cannot predict the future, it can evaluate the possibility of something happening according to the existing data, especially in the complex factors, and find the possibility of some factors that are easy to be ignored to mix and produce results - so it can do things those human beings cannot do in normal calculations. At the level of meeting the professional and standardized requirements of decision-making, the in-depth learning system plays an important role, that is, the government can systematically use knowledge to guide forward-looking and social change decision-making methods; Through these algorithms to help the government deal with coupling and complex problems; By analyzing complex data and combining resources in other fields, we can mine information that is easy to be ignored and missed, or eliminate the interference of unnecessary factors. Therefore, unlike automated systems, deep learning algorithms can not only replicate existing successful practices and reduce labor costs, but also do better than humans.

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