
Research on Criminal Mental Health Risk Assessment and Intelligent Correction System Based on Multi-source Data Fusion

Zhifei Xu, Dongming Jia*, Xiu Cheng

Zhejiang Police Vocational Academy, Zhejiang, 310000, China

*Corresponding Author: Dongming Jia

Abstract:

This paper mainly discusses how to build an intelligent criminal mental health risk assessment and correction system with the help of intelligent information technology, to help relevant departments to solve the shortcomings of traditional psychological correction work, to resolve the security risks and crisis of supervision, and to meet the needs of personalized correction of criminals. The system is mainly composed of four modules: multi-source data acquisition, multi-source fusion analysis and cross study, intelligent recommendation of correction strategy and intelligent correction. The system comprehensively uses the technology of data collection, data analysis, probability statistics, pattern recognition, deep learning and virtual reality to scientifically carry out the mental health risk assessment of criminals, and realize the accurate identification of individual psychological state of criminals, Intelligent push correction strategy, and relying on the intelligent orthodontic system to carry out all-round correction work. The goal of the system application is to continuously enhance the individualization, accuracy and intelligence of the criminal psychological evaluation and correction work, improve the quality and effectiveness of correction and reform, gradually reduce the recidivism rate, and strive to ensure the safety of supervision and social security.

Keywords: *Multi-sourcedatafusion, Criminals, Mentalhealth risk assessment, Intelligent correction system etc.*

I. INTRODUCTION

The mental health problems of criminals endanger the safety of supervision and society. Criminals, as a special group, have a certain amount of physical and psychological pain under the punishment after entering prison. After stimulating or frustrating life events inside and outside the prison, they are prone to various psychological problems and psychological obstacles or mental illness. According to a survey by the Guangdong Prison Administration, about 42% of criminals have obvious mental health problems, of which serious psychological

problems, psychological abnormalities and mental disorders or mental illness accounted for 16.1% [1].

Xu Yanchun and others used SCL-90 to investigate the mental health status of criminals serving sentences. The results showed that the criminals had 9 symptoms in the number of positive items and somatization, coercion, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia and psychosis. The factor scores are significantly higher than the national norm, indicating that the mental health status of criminals in prison is obviously abnormal [2]. Xu Yuewang and other randomly selected 20 newly admitted criminals, mid-term reformed criminals, and soon-to-be-committed criminals to conduct a sample survey. The psychological test results were: "asymptomatic", 47% of "very mild symptoms", 37% of the patients had moderate symptoms, 15% had "severe symptoms", and 1% had "severe symptoms" [3]. The above situation severely interfered with the normal supervision and transformation work, and even resulted in accidents that endangered the safety of supervision. A small number of criminals have even turned their dissatisfaction with criminal judgments and reformation of prison sentences into open mad revenge against the country and the people. The Ministry of Justice once counted the relevant data: China's recidivism rate is now the world's middle level, but in major malignant criminal cases, the recidivism accounted for by prisoners accounted for 70% [4].

II. THE ROLE AND SIGNIFICANCE OF SYSTEMATIC RESEARCH

The goal of the system research and application is to help the relevant departments to solve the shortcomings of traditional psychological correction work, resolve the potential safety hazards and crisis of supervision, meet the needs of personalized correction of criminals, continuously enhance the individualization, accuracy and intelligence of criminal psychological evaluation and correction work, improve the quality and effectiveness of correction and reform, gradually reduce the recidivism rate, and strive to ensure the safety of supervision and society Security.

2.1 Crack the Shortcomings of Traditional Psychological Correction

(1)To solve the problem of insufficient comprehensive data collection and analysis of psychological assessment. Using multiple types of cutting-edge mood, body, sleep and other psychological assessment scales and assessment tools at home and abroad, through the big data fusion analysis of multiple types of scales and the vertical and horizontal quantitative comparison of correction effects, it is possible to crack the independent results of various psychological assessments , Lack of comprehensive analysis and comparison, resulting in the lack of comprehensiveness and accuracy of the evaluation results.

(2)To solve the problem of inaccurate judgment of psychological conditions caused by criminals' passive response or even confrontation. Multi-dimensional criminal management data (basic criminal data, psychological evaluation data, physiological health data, education reform data, prison investigation data, etc.) based on multiple sources (manual registration, video surveillance, voice semantics, physiological sensing, etc.), subjective and objective Factor

fusion analysis can make criminal psychological assessment results more objective, scientific, comprehensive and accurate. For example, a criminal risk assessment tool for a prison in a province is based on criminal static data and dynamic transformation traces including basic dimensions, psychological dimensions, social dimensions, reform incidents, and time of admission, and establishes criminals through computer mathematical modeling. The evaluation index system is integrated with the risk degree and tendency, so as to make an analysis and pre-judgment on the criminal's "escape, murder, suicide" and other risks and tendencies.

(3) To solve the problems of psychological abnormality and discover that it is not timely enough. You can set different scores for the psychological abnormality according to the type and severity of the psychological crisis early warning system, and classify and summarize the test results, score scoring, and intelligent early warning. For example, a prison in Zhejiang Province, through the application of the psychological crisis early warning system for criminals, can detect the psychological abnormalities of criminals and the signs of violations and violations in a timely manner, and intervene in intervention and correction in advance to achieve the effect of "solving problems in the budding state".

(4) Conform to the development direction of criminals' psychological correction. With the help of big data and artificial intelligence technology, the research results of criminal factors are put into practice, which is in line with the development direction of criminal psychological correction. The traditional "scale evaluation + three-class education + labor reform" model in prisons has a relatively limited remodeling of the prisoners' psychological personality, and they cannot effectively correct their defects in personality, wrong outlooks on life and values, resulting in re-crime. Throughout the literature at home and abroad, the research results of criminal factors have become more and more abundant. With the help of the viewpoints and knowledge of sociology, psychology and other disciplines, the root causes of the occurrence and development of crime cannot be fully explained, and the biological factors of crime have caused It has attracted the attention of scholars.

Based on the collection and research of biological-behavior-psychological-social medicine and other types of factors, it is the development direction of new evaluation and correction strategies [5].

2.2 Resolve Hidden Dangers and Crises of Regulatory Safety

(1) To realize the prediction, early warning and prevention of criminal psychological abnormality. Traditional psychological correction methods usually only intervene when the offender behaves in violation of rules and discipline. By studying the "portrait" technology of individual criminals, the precise identification of mental health risk categories can be realized, and the psychological abnormalities of the criminals and the signs of violations and disciplines can be found in a more timely and accurate manner, and intervention and correction can be made in advance to achieve the effect of "solving problems in the budding state".

(2) Realize the effective intervention of sudden crisis. The research on evidence-based correction database and correction strategy construction, quickly push highly targeted correction strategies, timely and effectively resolve criminal psychological crisis.

(3)To reduce the risk of criminals going out for treatment. Through remote video psychological diagnosis, counseling and psychological correction based on VR/AR multi-modal interaction, criminals can get professional intervention and treatment without leaving the supervision area.

2.3 To Meet the Individualized Correction Needs of Criminals

Due to factors such as age, education level, crime type, life experience, family relationship and other factors, the criminals' diversity and particularity of their unhealthy psychology and personality are present, and the traditional education reform method of "knowing people" cannot meet the needs of increasingly personalized corrections. Multi-source data fusion analysis and cross-judgment technology, criminal psychological personality modeling and "portrait" technology, evidence-based correction database, correction strategy intelligent recommendation, intelligent correction technology and other technical applications throughout the process have formed scientific evaluation and fusion analysis , Prediction and early warning, wisdom correction of the correction and shaping work system, effectively promote the criminal psychological assessment and correction work to the scientific, personalized, precise, standardized development, especially for the "correction and shaping" effect is particularly important.

III. SYSTEM CONSTRUCTION PRINCIPLE AND OPERATION PROCESS

3.1 System Construction Principle

(1)Principles of economy, practicability and compatibility: make full use of the criminal education reform network that has been put into use by the prison, "J3C" criminal risk assessment tool, "Safety 360" criminal psychological crisis early warning system, prison situation analysis system, VR/AR psychological correction equipment and other achievements obtained in the construction of smart prisons, operating systems, equipment resources and accumulated data resources.

(2)Advanced and forward-looking principles: compare and use machine learning and deep learning algorithms such as convolutional neural networks, decision trees, and support vector machines, including fusion algorithms involving multiple psychological assessment scales, voices of criminals based on intelligent monitoring, Multi-source data fusion algorithm for semantics, expressions, physiology and other abnormal behavior characteristics, personalized modeling of criminal mentality and "portrait" technology based on multi-source data fusion, construction of evidence-based correction database and comprehensive "portrait" based on individual criminals The intelligent recommendation technology of the correction strategy, the intelligent online professional ability evaluation and training management system based on the criminal education special network, the VR/AR interactive scene content and related technologies based on the psychological and physiological feedback mechanism.

3.2 System Operation Process

We can compare the "intelligent mental health risk assessment and correction of criminals" to the process of "spiritual doctors" in prisons for the treatment of criminals' "psychiatric diseases". We need to find the cause of each "patient" and administer the right medicine.

(1)The first step is to build a "case"-for each criminal to establish its "mental health and correction electronic file." Collect multi-source data such as the basic information of criminals, social background and family information, crimes committed and penalties, physical health and illness information, mental health assessment, behavioral characteristics, correction records, etc., and build a "mental health electronic file" To enable prison correction management personnel to have a comprehensive understanding of each aspect of each criminal, and provide a basis for the next judgment.

(2)The second step is to find the "cause" and make a "diagnosis". In this process, the help of informatization is mainly reflected in: through the introduction of artificial intelligence and big data analysis technology, the combination of subjective and objective factors, fusion analysis and cross-judgment of multi-source data such as psychology, physiology, abnormal behavior, etc.,to accurately identify each Criminals' mental health risks and put different "characteristic labels" on everyone. Criminals of the same type have common features in the "routines" of correction, so that by building a correction case database and correction strategy model, using algorithms, intelligently matching the type of correction strategy to assist the police to judge the general direction of education reform And the basic policy, and then determine the focus of correction for specific individual conditions, and prescribe a "prescription".

(3)The third step, "According to the prescription". The prison police select the corresponding correction resource module according to the correction focus and transformation direction of each criminal obtained from the analysis, and formulate a targeted correction plan. In the process of "taking medicine according to prescription", the help of informatization is mainly manifested in the construction of correction resources. Use a reasonable and advanced data architecture to establish a multimedia correction resource database (according to personalized, modular, and fragmented design), classify various correction resources according to purpose, characteristics, suitable prisoner type, etc., and mark them with corresponding "feature tags" To enhance the "targetedness" of correction resources. In this step, we also creatively research and develop VR/AR interactive content for psychological correction and vocational skills training to increase the interest of criminals and enhance the effect of correction.

(4)The fourth step, "take medicine", look at "curative effect"-mainly refers to the implementation and effect evaluation of the education reform plan. For the implementation of the plan, the most important thing is to ensure that the specific work (specific projects, activities, etc.) is effectively "implemented"; for the effect evaluation, it is necessary to achieve quantitative evaluation and accurate evaluation as much as possible. The help of informatization is mainly reflected in the support of the implementation process of the correction plan and the record of the effect evaluation, to achieve quantitative evaluation and accurate evaluation, and to obtain a more intuitive display with the help of charts.

(5)The fifth step is to adjust the "medication" or start the next course of treatment-the same method, for different people, the "curative effect" will be good or bad. According to the "curative effect", it is possible to make corresponding adjustments to each criminal's next correction work.

IV. THE MAIN CONTENTS OF SYSTEM RESEARCH

The system plan is composed of four parts: multi-source data collection, multi-source data information fusion analysis and cross-judgment, evidence-based correction strategy intelligent recommendation, and intelligent correction.As shown in Figure 1.

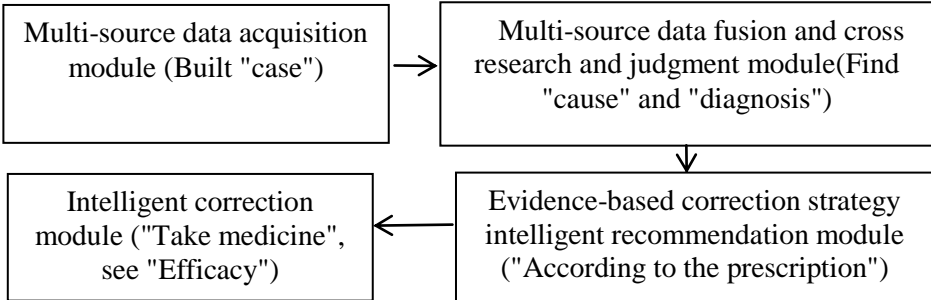


Fig 1: Multi-source data fusion criminal mental health risk assessment and correction system

4.1 Multi-source Data Acquisition Module

The prison risk assessment tool for a prison in Jiangsu province automatically captures all kinds of data that affect the dynamic changes of criminal risk from the big data platform in real time, so that it can automatically aggregate, automatically calculate, automatically research and judge, automatically warn and prompt, automatically visual display, comprehensive and fast Effectively identify criminals' danger levels and categories, and help prison police to accurately and timely judge the criminals' danger. If you want to accurately assess the mental health risks of criminals, you also need to automatically capture and dynamically analyze a large number of structured and unstructured data (including basic criminal information, prison management data, education reform data, psychological evaluation data, and penalties) Real-time capture of some unstructured data such as execution data, prison investigation data, criminal health data, speech semantics during individual conversations and family meetings, physiological data, facial expression data, and other abnormal behavior characteristic data).The composition of the module is shown in Figure 2.

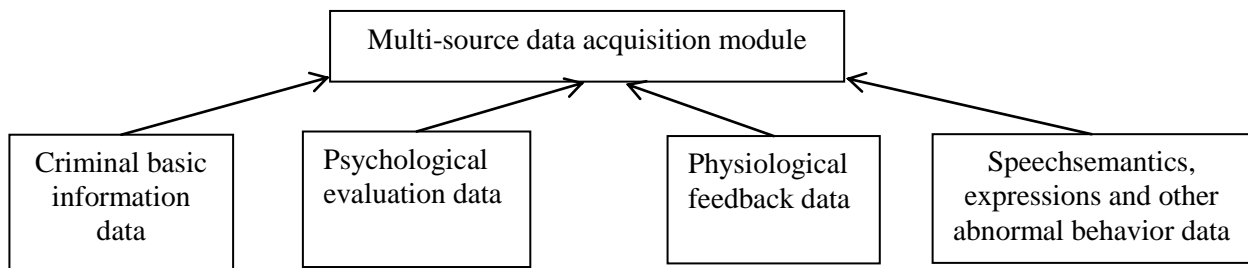


Fig 2: Multi-source data acquisition module

(1) Basic information data collection. It is mainly to summarize the basic information of criminals when entering prison and the dynamic correction data during detention to form a record of the whole process. The basic information of the offender will include multi-dimensional information such as the offender's natural information, the punishment situation, social and family background, and psychological assessment. The correction information will include the historical trends of correction data such as correction records, reward points, labor points, large-account consumption, and visits by relatives and friends. The data files established by prisons for criminals can more comprehensively reflect the criminals' initial psychological and behavioral characteristics and transformation performance, and provide a basis for the police to carry out personalized management, education and correction [6].

(2) Psychological evaluation data collection based on the criminal education special network. Make full use of the mental health early warning and correction system of criminals already in operation in some prisons to carry out psychological assessments for entering, detaining and leaving prisons to obtain assessment data. Set up the front-end of criminal evaluation on the special education network, and configure a variety of psychological evaluation scales, including universal tests such as sleep disorders, anxiety symptoms, depression symptoms, physical disorders, COPA-PI, and real-time evaluation scales such as stress events and conciseness.

(3) Physiological feedback data collection. For example, physiological data collection based on VR/AR content interaction. Research on VR/AR scene content and equipment based on psychological and physiological interaction feedback mechanism, with more scientific and comprehensive physiological feature collection function and VR/AR interactive content library containing multiple types of mental models. The specific collection and implementation steps are as follows:

- In the first step, psychology staff find the most targeted evaluation clues and scenarios based on the criminal's personal mental health electronic files and psychological problem categories.

- The second step is to hire personnel to reproduce the scene with the stimulus factors such as item clues and situation clues combined with three-dimensional modeling technology, and record with high-definition cameras and lenses.

- The third step is to match the corresponding high-fidelity environment sound effects according to the scene material. Combining video materials, interactive virtual reality content is produced with high fidelity.

- The fourth step is to detect various physiological and psychological data of the criminal individual's resting electrocardiogram.

- The fifth step is to allow the prisoners to enter a scene such as a head-on conflict, let the characters and events in the virtual world face off against each other, and test the criminal's various physiological feedback data changes, such as heart rate variability, to detect whether they can be rational and don't react excessively. Based on statistical data, the development of electrocardiogram learning or deep learning algorithms was developed, and the criminal mental health risk quantitative evaluation value and recidivism probability value were obtained [7].

(4) Extraction of criminal voice, semantic, expression and other abnormal behavior features based on intelligent monitoring. For example, in educational conversations, family meetings and other occasions, the law enforcement recorder automatically collects and uploads audio and video files. For large amounts of structured and unstructured data, support vector machines (SVM), K nearest neighbor method (KNN), integrated learning (Ensemble Learning) and other machine learning algorithms or convolutional neural networks (CNN), generative adversarial networks (GAN) and other deep learning algorithms and other algorithms are combined, through the front-end pre-processing and feature extraction, the back-end uses classification algorithm statistics Modeling, and finally realize classification recognition. At present, the extraction and recognition technology based on speech, semantic, physiological and other abnormal behavior features have made significant progress and gradually put into application, but facial expression feature extraction and recognition (FER) (can be used for mental disease diagnosis and human social/physiological interaction (Detection) Due to three major challenges in unrestricted real-world environments: light changes, head posture and subject dependence, there are also major technical obstacles [8].

4.2 Multi-source Data Information Fusion Analysis and Cross-research Module

The composition of the module is shown in Figure 3.

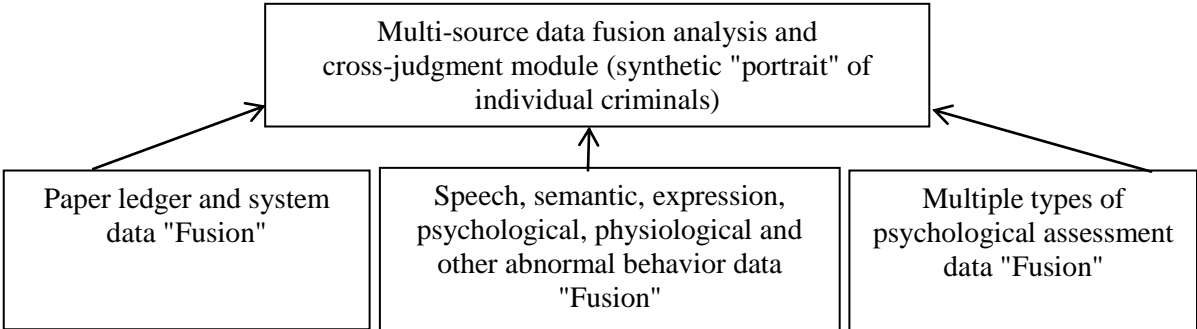


Fig 3: Multi-source data information fusion analysis and cross-research module

(1)Paper account and system data "fusion". Bring the original criminal correction programs, correction records and other paper materials into the system, establish a relatively perfect criminal mental health electronic file, research and develop the number of prisoner reform time as the vertical axis, and describe and evaluate the criminal's psychological changes throughout the process The model provides a detailed sample for further summarizing the experience of corrective work and improving the corrective work method.

(2)Multi-type psychological evaluation data "fusion". The psychological crisis early warning system currently in operation in the prison has relatively independent evaluation reports among the various types of psychological evaluation scales deployed, and the scientific and accuracy of a single evaluation scale are lacking. It is necessary to integrate multiple types of psychological evaluation data to achieve comprehensive analysis, comparison and verification, and improve the scientificity and accuracy of early warning.

(3)"Fusion" of the criminal's voice, semantics, expression, physiology and other abnormal behavior data based on intelligent monitoring. Detect and recognize people's language, facial expressions, physiology (body temperature, breathing, heart rate) and abnormal behavioral characteristics, use machine learning or deep learning algorithms to convert them into psychological indicators, combined with fusion analysis of multiple types of psychological assessment scales, build Personalized modeling and portrait system of criminal mental state based on data, assist in detecting and diagnosing certain specific psychological, mental states and diseases of criminals, and realize personalized recommendation of correction content and strategy [9]. For example, heart rate variability (Heart Rate Variability) analysis methods have developed rapidly in the field of psychiatric diagnosis, and are gradually applied to the auxiliary diagnosis of anxiety disorders, depression and other diseases. The autonomic nervous system of patients with depression has changed compared with ordinary people, mainly manifested in weak parasympathetic nerve function and increased sympathetic nerve function excitability. The quantitative expression of this change in the autonomic nervous system can be analyzed by heart rate variability. Machine learning-based methods (Bayesian algorithm, Naive Bayes algorithm, decision tree algorithm) can find a quantitative relationship between the HRV parameters describing the autonomic nervous system and the degree of depression.

4.3 Intelligent recommendation module for correction strategy

The composition of the module is shown in Figure 4.

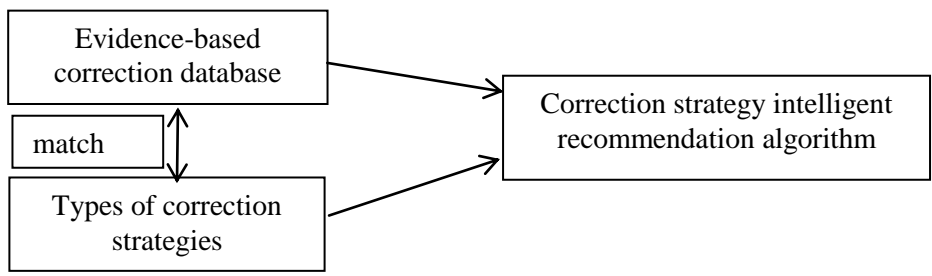


Fig 4: Evidence-based correction strategy intelligent recommendation module

(1) In the judicial "technical revolution", the court system has adopted a "case-like intelligent push system". Case-like judgment means that the same or similar cases can get the same or similar judgment results. The mechanism is to find the cases that are similar or even the same as the case in hand for the judge through passive or active methods, so as to inspire and expand the judge's judgment. , To help judges judge the purpose of correct judgment. The Supreme People's Court has officially launched the "Class Case Intelligent Push System", based on the premise of big data-based machine learning or deep learning algorithms, to establish a class case judgment standard database, and construct a mandatory search mechanism for class cases and related cases to provide judges with Multi-dimensional and multi-level analysis scenes, through automatic retrieval, case push, semantic analysis of judgment documents, comparative analysis and other methods to avoid non-category judgment cases[10].

(2) Learn from the "Intelligent Push System for Case-like Cases" to study the smart push module for criminal correction strategies. The module consists of an evidence-based correction database, corresponding types of correction strategies and intelligent recommendation algorithms for correction strategies. Based on the aforementioned multi-source data fusion analysis and cross-judgment of criminals, an evidence-based correction database and correction strategy model can be constructed. The evidence-based correction database includes multiple sub-bases of data evidence sub-base, case evidence sub-base, multimedia evidence sub-base, literature evidence sub-base and tool method sub-base [11]. Criminals of the same type have common features in the "routines" of correction. Analyzing and extracting these common contents can assist the police to clarify the general direction and basic policy of correction, and then study and apply machine-based learning or the recommended algorithm for the correction strategy of deep learning, clarify the focus of correction, and select the corresponding correction module.

4.4 Intelligent Correction Module

Personality is relatively stable under the common influence of both genetics and environment, but long-term psychological stress or continuous psychological treatment will change some characteristics of personality [5]. Psychological correction of criminals is a systematic, long-term and continuous process, which requires personalized comprehensive treatment including psychological treatment and intervention, laws and regulations education, knowledge and culture education, professional skills and literacy training, and also requires the use of interactive technologies such as VR/AR Innovative forms including content are used to attract criminals to participate in interest, and implement correction in a subtle way. The composition of the module is shown in Figure 5.

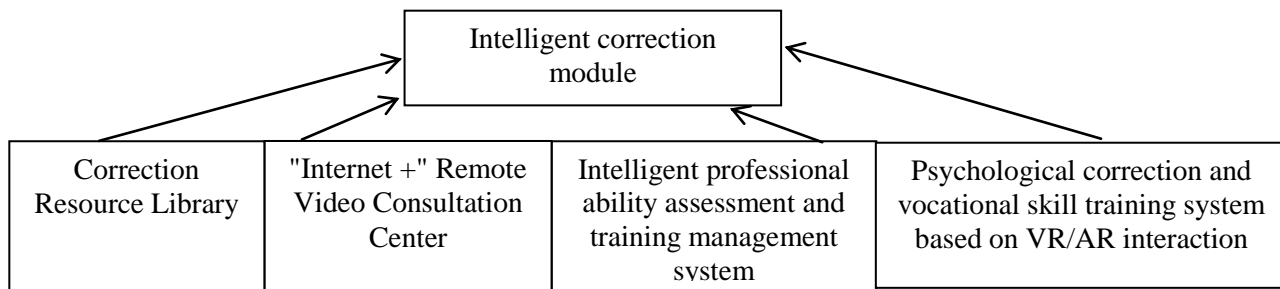


Fig 5: Intelligent correction module

(1)Based on the criminal education special network, build a classification and correction resource database. Corresponding to different types of criminals, according to the personalized, modular and fragmented policies, plan and design a multimedia correction resource library, covering various modules of three-course education.

(2)Based on the criminal education network, build an intelligent professional ability assessment and training management system. According to previous studies, the reemployment situation after leaving prison is a crucial factor affecting the recidivism of criminals. Through the modular division of occupational skills and occupational qualities, the training resources can be set up according to ability types. It automatically summarizes the statistics of the learning and testing of various modules of criminals, and automatically generates score statistics charts of individual professional ability modules of individual criminals, providing a scientific reference for the criminals' labor reform and job placement and selection to the society. For example, based on the results of vocational ability assessment, carry out analysis and judgment of criminal labor capacity and job matching, so that different criminals can engage in labor of suitable nature and intensity, and improve the relevance of correction and transformation.

(3)Based on the criminal education interactive data, the quantitative evaluation of the correction effect is realized. Promote the combination of quantitative and qualitative evaluation of educational effects, and shift from relying on experience evaluation to data-based evaluation, and from results-based evaluation to full-range evaluation, making content selection more accurate, full-range monitoring becomes possible, and effect evaluation is more quantitative. Make good use of click evaluation data: through the background data such as the number of readings, likes, and reposts of resources, accurately grasp the criminals' interest points and resonance points, provide a basis for the evaluation of educational effects and the selection of educational topics, and improve the pertinence and effectiveness of education Sex. Make good use of interactive feedback data: the concealment and equality brought about by online interaction overcome the concerns and worries of criminals in "face-to-face" communication, and it is easier for educated people to open their hearts and open their hearts. In the future, barrage can be introduced into video education resources to grasp education feedback in real time and rely on "online questionnaires" to conduct feedback surveys [9].

(4)Based on the "Internet +" video consultation center, carry out remote video clinics or psychological intervention. The prison set up an "Internet +" video consultation center, signed a

psychiatrist and a psychological crisis intervention expert, which cannot be resolved by the prison psychological counselor. For serious psychological and mental problems, invite psychiatrists or psychosocial experts to conduct remote video clinics or psychological interventions. Doctor and social experts can systematically consult criminal psychological and behavioral evaluation reports and psychological counseling records, conduct video consultations or individual psychological counseling, and issue outpatient reports, medication prescriptions, or psychological counseling reports.

(5) Carry out psychological correction and skill training based on VR/AR technology.

Firstly, carry out psychological correction based on VR/AR interaction. Based on the psychological and physiological feedback mechanism, VR/AR interactive scene content assists the collection and research of psychological and physiological characteristics, as well as psychological correction and vocational skill training. For example, the frequent use of non-order communication by criminals in the communication process will directly lead to the accumulation and rise of their unhealthy emotions, thereby increasing the risk of re-criminal criminals [12]. Non-order communication includes ten categories: rhetorical communication, blocking communication, obscure communication, and cold violence communication. VR/AR correction content can be developed for different types of criminal psychology.

The prison can comprehensively use hybrid modeling technology, real-time efficient simulation technology, multi-modal interactive collaboration technology (to study the real-time, robustness and effectiveness of multiple modal perception or recognition such as gestures, physical objects and haptics) and high immersion Sense, high comfort VR headset technology (Research uses high immersion technology, mainly from high resolution and high refresh rate display, handheld two-button natural interaction mode, adaptive anti-blue light eye protection and support for third-party content access The key technologies such as the open SDK, etc.) are built. VR/AR smart classrooms are built to integrate virtual reality and psychological correction. The abstract concepts are embodied, and professional psychological correction, relaxation training, and emotional catastrophe are widely carried out. Immersive education of psychological situation and life skills of imminent prisoners is promoted to connect them seamlessly with society. For example, bereavement counseling can be conducted for bereavement criminals, and the immersive experience of AR can be used to allow bereavement criminals to express grief and vent emotions in immersive virtual facts to relieve grief and actively transform.

Secondly, carry out skill training based on VR/AR interaction. Studies have shown that the prominent factors that affect secondary crimes are social factors, mainly including marriage and family, property residence, education and employment, etc. Among them, education and employment factors are particularly critical [13]. Due to the long-term separation of criminals from the normal society, there is a huge gap between professional ability and social needs. After going to the society again, they often cannot adapt to social work, leading to self-abuse and self-abandonment, and finally to the criminal path again. Therefore, the training of criminal vocational skills is crucial to the consolidation of correction effects. Different vocational skills

training packages can be developed for different occupations and types of jobs, such as car repairs, welding, and carpentry, so as to help criminals acquire the necessary vocational skills in the closed environment of the prison. Using tactile feedback technology to make the experience more real, and this operating experience can be directly translated into actual work skills.

V. CONCLUSIONS

The overall process design of the system is based on five steps: building a "case", finding a "cause", doing a "diagnosis", "taking medicine according to the prescription", "taking medicine" and seeing "curative effect", adjusting the "medication" or starting the next course of treatment. In one go, the ultimate goal is to continuously enhance the targeted, precise, intelligent, and modularization of corrections and transformations, effectively respond to the increasingly complex situation of criminals and the increase of short-term prisoners, improve the quality and effectiveness of corrections, and effectively reduce reoffending Rate, reduce serious and serious criminal cases, ensure regulatory safety and social security, and ensure the safety of the lives and property of the people to the greatest extent.

Focus on future development, the implementation of the system will depend on the prison management department increasing its work from the following aspects:

Establish a mental health risk assessment framework that is suitable for it in the context of big data, and model and big data for business logic Processing.

The further collection and analysis of unstructured data. The unstructured data contains many key information points, such as the restoration and description of the crime in the criminal file, the voice and video data of the family phone or meeting, the data in the video surveillance, etc., all of which imply a lot of Information and factors worth analyzing and in-depth mining [14].

In-depth study of machine learning or deep learning algorithms suitable for fusion analysis of different categories of data, especially the combination of multiple algorithms, to further improve the accuracy of discrimination.

ACKNOWLEDGEMENT

This article is the research result of the 2017 Zhejiang Education Science Planning Research Project(No. 2017SCG316) and the 2020 Zhejiang Provincial Science and Technology Department Soft Science Research Program (No. 2020C35073).

REFERENCES

- [1]Guangdong Prison Administration, Investigation Report on the Psychological Status of Prisoners in Guangdong Province, Research on Crime and Rehabilitation, 2009, 3:13-22
- [2]Xu Chunyan, QiuHongzhong(2007) Investigation and analysis of the mental health status of criminals serving sentences. Chinese Health Psychology 1: 92-93
- [3]Xu Yuewang, Wang Lin, (2015) Researchon prison psychological correction work. China Justice 12, 63-67.

- [4]JinLinlin (2012) Analysis and countermeasures of the problem of recidivism of persons released from prison and their countermeasures. Journal of Henan Police College 6: 34-36
- [5]Liang Yaqiong (2010) Analysis of personality characteristics of repeat criminals and preventive measures. Social Psychology 25(2): 70-72
- [6]Xiong Shuping (2014) Application of psychological correction in criminal education reform. Journal of Hubei Police Officer College11:143-146
- [7]XieYisheng (2018) Practical exploration of aversion therapy combined with virtual reality technology in drug rehabilitation work. Journal of Yunnan Police Officer Academy 3: 7-10
- [8]NajmehSamadiani, Huang Guangyan, Cai Borui,Luo Wei, Chi Chihung, Xiang Yong and He Jing (2019) A Review on Automatic Facial Expression Recognition Systems Assisted by Multimodal Sensor Data. Sensors 19: 1863
- [9]Cheng Pengxi (2018) Personalized modeling and user portrait system of learners on online education platform. Master Degree Thesis of Harbin Institute of Technology 6: 42-45
- [10]ZuoWeimin (2018) How to use artificial intelligence to achieve the judgment of cases. China Law Review 2: 26-32
- [11]Zheng Xi (2015) Research on the construction of evidence-based correction database. Criminal and Transformation Research 6: 20-24
- [12]Gu Hongxiang, LiWei, Fu Guohui (2013) Analysis and research on the psychological risk assessment of criminals re-offending. Journal of Jiangsu Police Officer College28(2): 52-56
- [13]Wu Xu (2018) Compilation of questionnaires on the risk of criminal recidivism and correction needs. Crime and Reform Research 10: 28-38
- [14]Chen Zhiwen, Huang Dongrong, Zhou Zhu (2019) Research and development and practice of criminal risk assessment system tools-taking Guangdong prison as an example. Criminal and Reform Research 8: 51-58