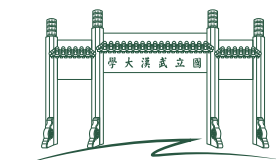




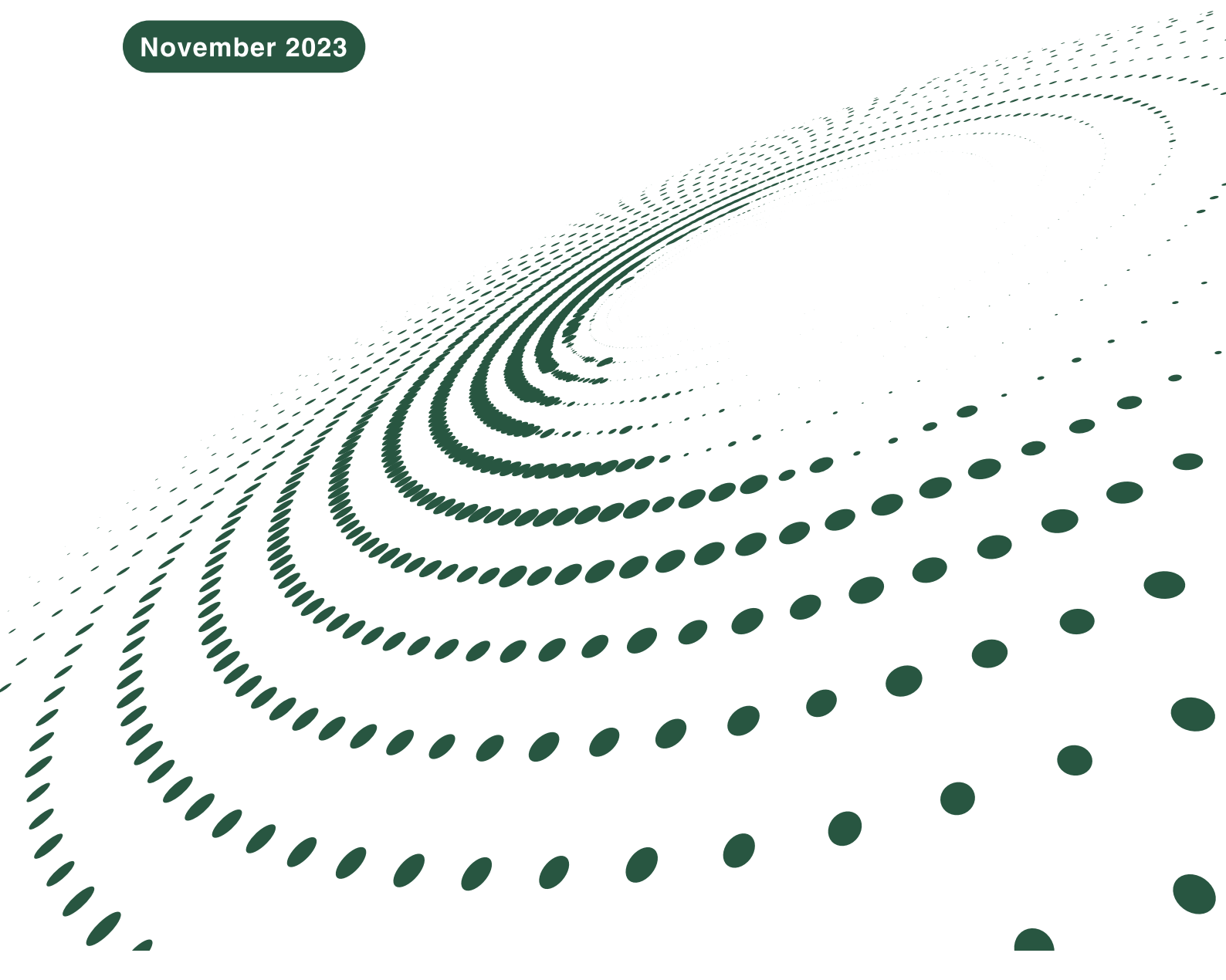
WUHAN
UNIVERSITY



The White Paper on Digital Intelligence Education of Wuhan University

Chapter : Digital Intelligence Talent Training

November 2023



Copyright Statement

The copyright of this White Paper belongs to Wuhan University and is protected by law. Any reprinting, excerpts or other uses of the text or ideas in this White Paper should bear the remarks “Source: Wuhan University”.

Panel of Experts

Leader: Zhang Pingwen

Deputy leaders: Huang Minxue, Peng Zhiyong

Members (in alphabetical order of surname) :

Gao Baojun, Guo Chi, Hong Liang, Hu Qingwu, Huang Hao, Huang Minxue, Huang Zhixiong, Ji Donghong, Jiang Hao, Jiang Jiawei, Jiao Yuling, Li Chenliang, Liang Shaobo, Lu Wei, Lv Xiliang, Meng Xiaoliang, Peng Rong, Peng Zhiyong, Qin Kun, Wang Hao, Wang Sheng, Wang Xiaoguang, Wu Dan, Xiang Yan, Yan Li, Yang Xianti, Yang Zhijian, Zhang Pingwen, Zhao Yiming

Working Group

Leader: Zhang Pingwen

Deputy leaders: Wu Dan, Zhou Wei, Bi Weimin, Liu Xin

Members (in alphabetical order of surname) :

Bi Weimin, Chen Suyi, Fang Kun, Guo Xianxing, Hu Jiagang, Jiang Xin, Jiang Yifei, Li Xiaofeng, Liao Sha, Liu Xin, Liu Huiming, Qiu Chao, Wang Dan, Wang Tianyi, Wu Dan, Zhang Pingwen, Zhou Wei, Zhu Zhimin

Translation proofreading Group

Zhang Yanyan, Cheng Xiangli, Seth Garrett

Abstract

With the rapid development of new-generation information technology, humanity has entered the digital age. Being extremely penetrating, digitalization has profoundly influenced all walks of life. At present, digitalization has become a national strategy, and ongoing effort has been made to construct Digital China. In the digital age, digital thinking and digital literacy have become the basic abilities that citizens should possess. As one of the powerhouses for cultivating top-notch personnel in contemporary China, Wuhan University keeps pace with the trend of the digital age, responds to the national strategic plans and needs, and offers digital intelligence talent training across disciplines and educational levels. On the basis of enhancing cross-learning of data sciences, more attention is paid to integrated training of digital skills in order to cultivate future-oriented composite digital intelligence talents.

The White Paper on Digital Intelligence Education of Wuhan University (hereafter referred to as the White Paper) begins with an introduction to digital intelligence education, investigates and analyzes the present situation of and noticeable differences in digital intelligence talent training in domestic and overseas universities, and demonstrates the advantages and specialties of digital intelligence education in Wuhan University on the basis of detailed data and cases. Wuhan University has all necessary disciplines that support digital intelligence talent training, including mathematics, computer science and technology, library information and archives management, surveying and mapping science and technology, geophysics, theoretical economics, business administration, law, and so forth. All of these disciplines are highly competitive domestically. Wuhan University has accumulated rich experience in and laid a solid foundation for digital intelligence talent training, exemplified as a comprehensive general education system and abundant digital intelligence education resources, enabling cultivation of digital intelligence talents and bringing forth fruitful results. Meanwhile, the White Paper further analyzes current difficulties and problems confronting digital intelligence education of Wuhan University, including the lack of systematic development standards and systematicity for relevant courses, the absence of differentiated and gradient training modes for talent cultivation, and the inadequacy of university-wide sharing of data resources and platforms. Therefore, the White Paper proposes the construction of an integrated digital intelligence talent training system with characteristics of Wuhan University.

Following the principle of “top-level design, overall planning, classified training, and steady progress”, Wuhan University has formulated a university-wide integrated scheme for the construction of a digital intelligence talent training system, aiming at full coverage of all majors and students in data science knowledge learning and skill training. Wuhan University posits the concept of “five-digitals-in-one” to

accelerate university-wide integration of digital intelligence talent training, namely, “cultivation of digital thinking as foundation, development of digital literacy as extension, refinement of digital intelligence courses as key, classification of digital intelligence talents as support, and establishment of digital intelligence platform as guarantee”.

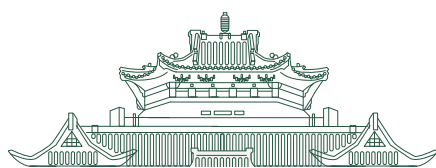
The scheme categorizes digital intelligence training into four types, namely “general, enabled, applied, and professional”. The principle of course selection is modularized and “classified + gradient”. The principle of course arrangement is “integration + innovation”, and the principle of differentiated teaching is “basis + scenario”. The scheme sets up 18 core courses on data science available to all students of the university, as an attempt to resolve the conflict between differentiated major-dependent training and unified knowledge learning. Such an arrangement can accelerate the integration of data science and various majors, and facilitate digital intelligence education across majors by drawing upon university-wide resources. Contents of the scheme include the overall training objectives and concepts concerning digital thinking, digital literacy, digital intelligence courses, digital intelligence talents and digital intelligence platform. The scheme is applied to three educational levels, namely undergraduate education, professional master education and doctorate education, and covers four types of talents, namely the “general, enabled, applied, and professional” talents in the fields of natural sciences, geographical space, health care, industrial production, finance and business, urban and rural governance, legal affairs and public opinion, and humanities.

Digital intelligence talent training of Wuhan University is a “five-dimension driven” program thoroughly implemented in accordance with the following principles: “full coverage of all students (subjects) , selection of courses (objects) by the whole university, use of resources (carriers) by the whole university, fully digital intelligence teaching (contents) , and integration of all majors (entities) ”. The supervisor resources, industrial resources, and research resources are triangulated for the all-round training and cultivation of digital intelligence talents capable of functioning effectively in real-life practices. Wuhan University uses “real data (calculation data) , real model (algorithm) , real processing (computing power) , and real scenario (computational problems) ” to develop students’ ability in using real data, applying real models, experiencing real processing, and solving real problems. To this end, internal and external resources are integrated, and the overall approach of “co-construction and sharing, interconnection, cross-integration, and open operation” is adopted to construct a university-level experimental and innovative teaching platform with a “standard system” and a “one-stop portal”, bringing together the three major resources of “data, tools, and computing power” to support talent cultivation, scientific research, innovation and entrepreneurship, and social services.

Contents

Preface	1
1. Introduction to digital intelligence education	3
1.1 Higher education in the era of digital intelligence	3
1.1.1 Digital intelligence education for social transformation and progress	3
1.1.2 Digital intelligence education for interdisciplinary integration.....	4
1.1.3 Digital intelligence education for cultivation of top-notch talents	5
1.2 Definition of digital intelligence education	6
1.2.1 Definition and characteristics of digital intelligence education.....	6
1.2.2 Contents and elements of digital intelligence education	7
1.3 Needs analysis of digital intelligence talent training.....	9
1.3.1 Need for technical innovation	9
1.3.2 Need for development of digital economy	10
1.3.3 Need for transformation into digital intelligence society	10
1.3.4 Need for participation in digital governance	11
2. Current status of digital intelligence talent training at home and abroad	12
2.1 Current status of digital intelligence talent training in foreign universities	12
2.1.1 Talent training system.....	12
2.1.2 Professional curriculum system.....	14
2.2 Current status of digital intelligence talent training in domestic universities.....	16
2.2.1 Talent training system.....	16
2.2.2 System of professional courses	18
3. Current status of digital intelligence talent training at Wuhan University	20
3.1 Characteristics and advantages of developing digital intelligence education.....	20
3.1.1 Education philosophy	20
3.1.2 Interdisciplinary advantages	20
3.1.3 Experiences of transformation into digital intelligence education	22
3.2 Analysis of the current status of digital intelligence talent training	24
3.2.1 Talent training system.....	24
3.2.2 The basis for talent cultivation	27
3.2.3 Challenges in talent training	34
4. Thoughts on and plan for digital intelligence talent training in Wuhan University	36

4.1 Overall objective of digital intelligence talent training	36
4.2 Contents and extension of digital intelligence talent training	37
4.2.1 Foundation of digital intelligence talent training	37
4.2.2 Value of digital intelligence talent training.....	37
4.2.3 Extension of digital intelligence talent training.....	38
4.3 The “five-digitals-in-one” training concept.....	39
4.3.1 Cultivation of digital thinking as foundation.....	40
4.3.2 Development of digital literacy as extension	40
4.3.3 Refinement of digital intelligence courses as key	41
4.3.4 Classification of digital intelligence talents as support	41
4.3.5 Establishment of digital intelligence platform a guarantee	42
5. Plan for digital intelligence talent training in Wuhan University	43
5.1 Plan for digital intelligence talent training, curriculum and textbook system	43
5.1.1 Overall plan and curriculum system for digital intelligence talent training	43
5.1.2 Classified training plan and curriculum system for undergraduate digital intelligence education..	47
5.1.3 Classified training plan and curriculum system for digital intelligence development among	
students pursuing the MPS degree	48
5.1.4 Training plan and curriculum system for doctoral digital intelligence education	50
5.1.5 Textbook system for digital intelligence talent training	51
5.2 Implementation and characteristics of digital intelligence talent training	53
5.2.1 Implementation of the “five-dimension driven” digital intelligence talent training program	
.....	53
5.2.2 All-round training of digital intelligence talents based on “three education-integration”	54
5.2.3 Internship and practices based on “four real-computing”	54
5.3 Experimental and innovative teaching platform for digital intelligence talent training	56
5.3.1 Overall plan of experimental and innovative teaching platform	56
5.3.2 “One dataset” for experimental and innovative teaching platform.....	57
5.3.3 “One toolkit” for experimental and innovative teaching platform	59
5.3.4 “One computing pool” for experimental and innovative teaching platform.....	60
5.3.5 “One standard set” for experimental and innovative teaching platform.....	61
5.3.6 “One-stop portal” for experimental and innovative teaching platform	62
5.3.7 “One digital intelligence community” for experimental and innovative teaching platform.	63
6. Summary and prospect	65



———— Self-improvement, Perseverance, Truth-seeking & Innovation ————

Contact address:

Undergraduate College, Wuhan University, Wuhan,
Hubei Province, P.R.China. 430072

Tel: 0086-27-6875 2641

Web: <https://uc.whu.edu.cn/szjy/szjybps.htm>

