Engineering Teaching on Information Aggregation of Communication Major

Wenjin Xu
School of Information Science and Technology
University of Science & Technology
Qingdao, China
15954263549@163.com

Abstract—A new research of teaching strategy for communication engineering is introduced in this paper. The study is on teaching research of communication engineering, which is based on the new technology of information aggregation. The article presents the information aggregation technology, data collection strategy in different kinds of network and effect of using the new teaching pattern respectively. The research method of the paper is to introduce the information aggregation technology into the communication engineering teaching. The comparison of the result of the teaching that uses the new method to the traditional teaching is clear. The result is that the technology of information aggregation is very important to enhance the study of students whose major are communication engineering. From the information aggregation point of view, the paper describes the importance and necessity that teachers use information aggregation as a teaching method for communication major. The conclusion of the research is that the new technology of information aggregation has great value in teaching of communication engineering.

Keywords-teaching research; aggregation; information analysis; communication major; big data

I. INTRODUCTION

The Information Aggregation has developed the way of mass data collection, transmission, and processing. The development trend of networking is showing a low-power ad hoc, heterogeneous interconnect, ubiquitous collaborative for the basic network of the new features. A wide range of perceptual characteristics of network will inevitably bring about vast amounts of heterogeneous data, the distribution of resources and autonomy. Information aggregation inevitably makes resource management and use of significant changes, and collaboration between autonomy resources and the integration of huge amounts of data. And it will naturally become a resource basic ways of sharing and convenience of cooperative work.

Therefore, the perception of integration and collaboration mechanism is the core issue of massive data processing. To solve this problem, we must first determine the participants, and then form a relatively stable fusion mechanism,. And also the demand integration in an open environment is the most important issue of information aggregation and data processing. At the same time, to measure, to analyze, to evaluate and to optimize these properties is a measure of the merits and effectiveness of integration and collaborative programs, guiding the design of aggregation and collaboration mechanisms to achieve.

II. TECHNOLOGY SUMMARY OF INFORMATION AGGREGATION

A. Information Aggregation

China's Information Aggregation resources on the one hand the low utilization of the integrated use of the low level of outstanding issues, on the other hand there are a lot of misuse of resources and services to the serious problem of lack of available security[1].

TABLE I. MAIN LESSONS OF COMMUNICATION ENGINEERING

Lectures	***Semester***	***Class hours***	***Type of examination***
circuit basis	2	64	Closed book exam
signal&system	4	80	Closed book exam
wireless communication	6	64	Closed book exam
digital circuit	4	64	Closed book exam
analog circuit	3	64	Closed book exam
computer network	6	64	Closed book exam
electromagnetic field theory	5	48	Closed book exam
communication basis	4	64	Closed book exam

B. Information Aggregation Synergistic Mechanism of Fusion

In order to adapt to the effective sharing and comprehensive utilization of vast amounts of information for the status and development trend of integration of vast amounts of information at home and abroad.

The project will go beyond the relationship type of data stored in relational databases, a variety of perception and storage of vast amounts of information, with information logical consistency of the spatial and temporal synchronization, precision, integrity, real-timeliness and entity identity, for in front of these five challenges, in order to protect the information availability as well as from the availability of information knowledge, create new mass data-aware integration of theory and information autonomy collaborative system architecture and algorithms.

The perception of the Information Aggregation synergistic mechanism of fusion and information is a new research direction, information collaboration, dynamic adjustment of the Collaborative concept is mainly used for the network at the network layer, network topology

updates; in the application layer is the main draw without a central feature of self-organization, scattered in the network's ability to organize themselves to take full advantage of existing network resources to complete the requested task[3]. The current study does not really involve the business layer of the Information Aggregation , in particular, information collaboration of the business support environment.

C. Integration of Perception

Integration in perception is also largely confined to the field of computer network data aggregation. Perceive things in the field of research attention has been given, but starting soon, the perception of information similar data terminal, the lack of perception of the entire network of environmental information and environmental information on self-organizing control of operations and business support environment. But the trend is to the development of comprehensive, multi-faceted perception, the perception of integration of business and support the environment of the topics mentioned is in line with the development[3].

Perception of the event logic-based data integration. Define the information object of this new information, starting from the data, events, logic, and information, formed from the bottom to the high-level hierarchy. As follows: the data is to use conventional keyword, the number of objective things, properties, location and the relationship between the abstract representation, in order to fit in this field using artificial or natural preservation, transmission and processing[4].

Summarized by the data, interpretation, comparison of means to carry out excavation, make it part of the data to settle down, and combined with existing events, you can form event logic. The information is time-sensitive, have a certain meaning, logic, after processing, decision-making valuable data stream. This study established the event logic, and its name, name resolution, authentication, security, routing, caching mechanism to do theoretical research and model.

Adjustable granularity perception different from the traditional network of coarse-grained perception, perception of an object does not have a comprehensive and real-time data sampling; also different from the general sense of the fine-grained perception, which the Information Aggregation data routing, transmission and processing with to improve the requirements of the index level, it is data-aware program based on the information objects of this new information unit. According to the information requirements to support the logic of events, adaptive adjustment of perceived data granularity, which not only guarantee the completion of the logic of events, without excessive perception of the environment, improve the efficiency in the use of data, effective use of network resources[5].

III. The Necessity of Information Aggregation

A. Integration of Multiple Data Networks

Information Aggregation is the integration of multiple data networks, its resources, most of the discrete distribution, and even dynamically change the needs of different application platforms, as well as a variety of applications running on a variety of resources are diverse and can be customized the relative stability in a certain period of time[6]. The data generated by the Information Aggregation is a massive, traditional database capacity and speed have been far short of needs. The emphasis of this study the dynamic allocation of data resources, scheduling mechanisms, as well as the logic of events changed circumstances in order to ensure the stability of the data resources, the resources from the organization adaptive adjustment mechanism study of self-organization of the data resources and correlation algorithm[7]. To reduce redundancy and improve data utilization; to speed up data acquisition, transmission and processing speed, improve the timeliness of the information.

B. Collaborative Model

In an open environment, the diversity of resources makes autonomy resources natural collaborative model may be different, collaborative environment, objects, and protocols tend to have uncertainty, dynamic, more self-government resources in a complex collaborative process.

TABLE II. Backbone Courses of Communication Engineering

Courses	***Grade/Semester***	***Credit***	***Experiment hours***
communication theory	3/5	4	16
signal&system	2/4	5	16
wireless communication	3/6	4	0
information theory	3/6	4	24
communication circuit	2/3,4	8	48
computer network	3/6	4	0
electromagnetic field theory	3/5	4	0
introduction to communication	1/1	3	0

There may be inconsistencies between the objectives and common goals, which are more complex requirements for autonomous collaboration capabilities of self-government resources and the distribution of the operating mechanism of the computing environment[8].

Open resources in the dynamic environment of dynamic, flexible, demand autonomy collaborative.

This topic the perception of the event logic-based data fusion method. Data, event logic, the integration of information is the Information Aggregation data stream from the bottom to the high-level hierarchy[10].

This is the project management process is applied to teaching activities, the specific implementation is based on a variety of students in the teaching situation of feedback, such as classroom lectures, homework, experimental ability display initiative to adjust the teaching content and to grasp the rhythm[11]. To achieve the students master the basic concepts, basic ideas and basis of curriculum content, and on this basis, according to the characteristics of college students learning French communication and

development in the future to do knowledge supplement and improve.

The PDCA loop is in accordance with the order of such teaching quality management, and the cycle is more than to follow scientific procedures. The following application of PDCA cycle in Teaching.

To develop a reasonable, feasible teaching plan -- the P stage. Making scientific plan, starting from the main problems, identify the causes and reasons, and according to the characteristics of their own, and then have a definite object in view to develop a feasible teaching plan[12].

In strict accordance with the development of good teaching plan implementation -- D stage. First to prepare lessons according to make good teaching plan, write lesson plans or making multimedia course ware. The implementation of teaching and then in accordance with the preparation of lesson plans, and relevant teaching etc..

After the lecture teaching effect of feedback or check -- C stage in the implementation of cooperation in running schools in the process of teaching or communication specialist. Completed stage teaching or teaching implementation process, can organize the students' evaluation of teaching or not hold regular student Sympathies on the implementation of the teaching plan and teaching effect of inspection and feedback. Examination of students in the process of English teaching communication professional understanding and cooperation, check the teachers and students of the teaching and learning of the fusion, in order to determine whether to achieve the expected teaching effect. To check out the problems in the course of teaching.

According to the teaching inspection feedback results, summarized -- A stage. Consolidation of results, improve the flaw and the insufficiency. Through the summary of teaching good part to be retained and promotion, to the problems in the teaching process and shortcomings, to find out the reason for the problem, and formulate the corresponding measures, so as to make English the next stage of science and technology teaching plan or scheme is the improvement and supplement, make it more perfect. Then a new round of the cycle, then sum up, further improvement, perfection[13]. This does not stop to go round and begin again to the benign operation. The results will promote us to continuously improve the teaching quality.

We drive teaching and living circumstance teaching in the teaching practice will project case together, make the student initiative to increase in the learning process, truly a "learn by doing" - master the theoretical knowledge, "to strengthen the foreign language learning with the middle school" --, "practice middle school" - engineering ability training.

IV. INFORMATION AGGREGATION OF RESEARCH OF COMMUNICATION MAJOR

The data is to use conventional keyword, the number of objective things, properties, location and the relationship between the abstract representation, in order to fit in this field using artificial or natural preservation, transmission and processing. Summarized by the data, interpretation, comparison of means to carry out excavation, making it a valuable part of settling down, and combined with the existing event, you can form event logic[14]. The information is time-sensitive, have a certain meaning, logic, after processing, decision-making valuable data stream. This study will establish the logical naming of the event, name resolution, authentication, security, routing, caching mechanism and other mechanisms[15].

College of information, the implementation of mentoring, on communication technology professional (specialist) the last years three years learning by professional teachers of the theoretical study, practical ability and future personal development coaching, played a very good effect. Graduate students generally have a better course[16].

School of information sent in accordance with the arrangement of the school planned as French communication technology professional (specialist) teachers and research enterprise cooperation, for the bilateral communication technology professional (specialist) provides a new platform for students professional ability[17].

Communication technology professional (specialist) also several expatriate teachers to inspect and study the domestic famous university, enhance personal accomplishment, better services in education and teaching.

Communication technology professional (specialist) related teaching links also to each new teachers, and part-time teachers' training, including: the syllabus, teaching calendar to fill, to understand the teaching process arrangement, classroom discipline control, examination link arrangement, test, marking the standardized operation, examination paper analysis writing, performance reporting etc.. Help them as soon as possible into the school, to adapt to the rhythm of teaching.

An urgent need to break the constraints of the natural characteristics of objects to networked resources, the establishment of a harmonious and efficient integration of data resources of the Information Aggregation cooperating mechanism for cloud computing, environmental monitoring and other new Web-based technology to provide a common technology base, improve resource utilization efficiency of the Information Aggregation .

The logic of events is the timing relationship between the data leading to the incident or causal. Huge amounts of data in abstract event logic is a very difficult scientific problems, different time, place, will produce different data These data may be different sensors receive a variety of network protocols, transmission, and ultimately be stored in different database[18]. From these space-time discrete data abstracted event logic to fuzzy logic theory and data mining technology. In the event logic above, the effective data. From data to information in the middle of the fusion event logic to effectively improve the efficiency of the use of data, reduce data redundancy and improve the time validity.

In order to ensure that the communication technology professional (specialist) training quality of graduates, and enterprises to establish a quality assurance system of taking students as the center, teaching from the educational administration management, management, several aspects of the employment services and quality management established process management, teaching and practice of the process of monitoring and other rules and regulations,

to ensure the students in learning and training in the process of learning effect and learning quality.

V. FORECAST

In this paper, a new subject of Information Aggregation Teaching Research of Communication Major is introduced. From the information point of view, the paper describes the possibility and necessity using Information Aggregation Teaching Research of Communication Major.

ACKNOWLEDGMENT

This paper is supported by the Teaching and Research Project of Professional English Effectiveness Study of Coherent Curriculum Teaching in Communication Major by College of Information Science & Technology Qingdao University of Science & Technology.

This paper is also supported by the Teaching and Research Project of Research on Construction of Teaching System of Communication Engineering Specialty from the Perspective of Knowledge-point Data Analysis by College of Information Science & Technology Qingdao University of Science & Technology.

This work is supported by Shandong Critical Project No.2007GG10004018, Natural Science Foundation of Shandong Province, China （Grant No. 2012ZRB019DM), and Supported by Higher school scientific research project of Shandong Province（Grant No. J12LN40), Shandong Province Statistical Research Key Project （The general project Grant No. 28 ） Research on Fusion and Correlation of Multiple mode Inter-working of Statistical Big Data .

REFERENCES

[1] H. Goto, Y. Hasegawa, and M. Tanaka, "Efficient Scheduling Focusing on the Duality of MPL Representatives," Proc. IEEE Symp. Computational Intelligence in Scheduling (SCIS 07), IEEE Press, Dec. 2007, pp. 57-64, doi:10.1109/SCIS.2007.357670.[1] Lee, O., Luykx, A. (2005). Dilemmas in scaling up innovations in science instruction with non mainstream elementary students. American Educational Research Journal, 42, 411‑438.

[2] DING Hai-yan(School of Information Science and Engineering,Yunnan University,Kunming 650091,China);Discussion about Teaching Mode of Computer Professional English[J];Journal of Yunnan Agricultural University(Social Science);2008-06

[3] E. Kendall, H. Muenchberger, N. Sunderland, M. Harris, and D. Cowan, "Collaborative capacity building in complex community-based health partnerships: a model for translating knowledge into action," Journal of Public Health Management and Practice, vol. 18, no. 5, pp. E1‑E13, 2012.Spillane, J.P., Diamond, J.B., Walker, L.J., Halverson, R., Jita, L. (2001). Urban school leadership for elementary science instruction: Identifying and activating resources in an undervalued school subject. Journal of Research in Science Teaching, 38, 918‑940.

[4] Anderson, T., & Kanuka, H. (1997). Evaluating the workplace center on-line forum: Knowledge construction and learning communities. Unpublished Research Report. Office of Learning Technologies, Human Resources, Canada .

[5] R. Quitadamo and F. Zambonelli, "Autonomic Communication Services: a New Challenge for Software Agents", to appear in the Journal of Autonomous Agents and Multi-Agent Systems, Springer,2007.

[6] C. Mitchell and L. Sackney, Profound Improvement: Building Capacity for a Learning Community, Routledge, Abingdon, UK, 2011.

[7] G. W. Wei, "Some induced geometric aggregation operators with intuitionistic fuzzy information and their application to group decision making," Applied Soft Computing, Vol. 10, No. 2, 2010, pp. 423-431.[9] Jia Wentao(Beijing Vocational College of Labor and Social Security,Beijing 100029);Exploration on Teaching of Professional English for Property Management Major[J];Journal of Beijing Vocational College of Labor and Social Security;2012-04

[8] Shankar R. P. and A. Fox, "Application-Service Interoperation without Standardized Service Interfaces",IEEE International Conference on Pervasive Computing and Communication, 2003.

[9] CUI Yu-bao(Computer Science & Engineering Department, North China Institute of Astronautic Engineering, Langfang 065000, China);Discuss on the Learning and Teaching of Computer Professional English[J];Journal of North China Institute of Astronautic Engineer;2003-04

[10] Rukzio, E., Wetzstein, S., SchMechatronic Componentt, A.: A Framework for Mobile Interactions with the Physical World. Invited paper special session "Simplification of user access to ubiquitous ICT services" at the Wireless Personal Multimedia Communication (WPMC'05) conference, Sept 18-22, 205 - Aalborg, Denmark.

[11] Anderson, T. (1996). The virtual conference: Extending professional education in cyberspace. International Journal of Educational Telecommunications, 2 (2/3),121‑135.

[12] Caracelli, V. J., & Greene, J. (1993). Data analysis strategies for mixed-method evaluation designs. Educational, Evaluation and Policy Analysis, 15 (2),195‑207.

[13] Lee, O., Lewis, S., Adamson, K., Maerten-Rivera, J., Secada, W.G. (2006). Urban elementary school teachers' knowledge and practices in teaching science to English language learners. Manuscript submitted for publication.

[14] A. Wary and M. Wallace, "Accelerating the development of expertise: a step-change in social science research capacity building," British Journal of Educational Studies, vol. 59, no. 3, pp. 241‑264, 2011. View at Publisher · View at Google Scholar

[15] A. Manzalini, F. Zambonelli, "Towards Autonomic and Situation-Aware Communication Services: the CASCADAS Vision", 1st IEEE Workshop on Distributed Intelligent Systems, 2006

[16] Berge, Z, " The role of the moderator in a scholarly discussion group (SDG)", [Online]. Available: http://star.ucc.nau.edu/~mauri/moderate/zlbmod.html

[17] H. J. Zimmermann, P. Zysno, "Decisions and evaluations by hierarchical aggregation of information," Fuzzy Sets and Systems, Vol. 10, No. 3, 1983, pp. 243-260.

[18] K. B. Mistry, C. S. Minkovitz, A. W. Riley et al., "A new framework for childhood health promotion: the role of policies and programs in building capacity and foundations of early childhood health," American Journal of Public Health, vol. 102, no. 9, pp. 1688‑1696, 2012. View at Publisher · View at Google Scholar