







TABLE II Data Structure Formations

Edge id	Edge name	Front node	Subsequent node
1	$e_0$	1	2
2	$e_1$	1	4
3	$e_2$	2	3
4	$e_3$	3	5
5	$e_4$	4	5
6	$e_5$	5	6
7	$e_6$	5	7
8	$e_7$	5	8
9	$e_8$	6	9
10	$e_9$	8	10
11	$e_{10}$	9	11
12	$e_{11}$	10	12
13	$e_{12}$	11	13
14	$e_{13}$	12	13
15	$e_{14}$	13	15
16	$e_{15}$	13	14
17	$e_{16}$	14	15
18	$e_{17}$	15	16
19	$e_{18}$	15	18
20	$e_{19}$	16	18
21	$e_{20}$	16	17
22	$e_{21}$	18	19
23	$e_{22}$	17	19

The system model shown in Fig. 2 is set up In accordance with the proposed algorithm to establish. This network model consists of 19 nodes, 23 edges, parameters, logo and other elements.

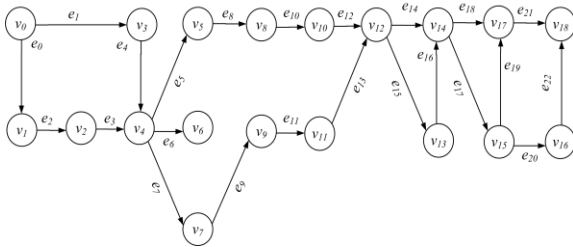


Fig. 2 A model made by auto-modeling methods

### 5. Conclusions

The presented algorithm greatly improves the modeling accuracies according to these means such as model node numbering, layer-column-type modeling, and multiple

parameter calculation methods. It ensures the consistency and integrity of the model, avoids encountering errors by the artificial modeling in the previous, and improves the modeling efficiency. This algorithm can also caused the model a real-time and synchronization change when the system content is maintained and altered. It guarantees the synchronization of the system information and data, and this synchronization changes can prevent the occurred danger owing to "unknowable" system problems.

In addition, it is also very important to settle system problem using the suggesting methods combining some decision-making. Therefore, more effective application based on generated models for the system failure prediction, monitoring and maintenance will be the next step work.

### Acknowledgment

This work is partially supported by the National Postdoctoral Science Foundation Granted numbered 2013M532033 and Industry-university-research Cooperation Project of Guangdong Province and Education Ministry Granted numbered 2011A090200060.

### References

- [1] O'HARE S, NOEL S, PROLE K, "A graph-theoretic visualization approach to network risk analysis," Visualization for Computer Security - 5th International Workshop, pp. 60-67, 2008.
- [2] ROBERT C, PAUL S, "A neural-network algorithm for a graph layout problem," IEEE Transactions on Neural Networks, vol. 7, pp. 341-345, 1996.
- [3] HUANG Yaping, DU Jiangeng, CHEN Henry, "Construct three-dimensional route from blueprint image of building," Chinese Journal of Beijing Jiaotong University, 2010, 34(2): 79-83.
- [4] Krieg-Bruckner B, Frese U, Luttich K, et al, "Specification of Ontology for Route Graphs," Spatial Cognition IV LNCS3343, 2005:390-412.
- [5] Xuejun Liu, Yazhou Jia, Riming Zhang, "Research on the control model and the automatically generation of cnc reliability intelligent network," Chinese Journal of Mechanical Engineering, vol. 39, pp. 114-117, 2003.
- [6] CHAITANYA Vempati, MATTHEW Campbell, "A graph grammar approach to generate neural network topologies," 2007 Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, v 6 PART A, 2008: 79-89.
- [7] HAN Zhong, CHEN Fumin, GAO Zhiyong, GAO Jianmin, "Node granularity transformations based on object directed acyclic graph in system modeling," Journal of Xi'an Jiaotong University, 2008, 42(9): 1122-1126.