

Research on Fusion Technology and Information Dynamics for Penetrative and Evolutional Network

Yuji Oie

(Kyushu Institute of Technology, Faculty of Computer Science & Systems Engineering, Professor)

【Outline of survey】

Since the Internet has been spread all over the world and linked the world borderlessly, it becomes the fundamental and social infrastructure of today's daily life. However, it is not yet sufficient to support the forth-coming Ubiquitous Society, in which a seamless and highly reliable linkage between the Internet and human activities in real-world with a huge amount of diverse information exchanged among persons and objects is required. In response to the requirement for quality and reliability against the explosive growth, diversity, and unevenness of the use of the Internet to fully support the human activities, R&Ds for the new generation dependable networking are highly imperative. In this research, therefore, we first focus on the "fusion" of diverse technologies on networks and services over them for not only locally but globally optimal resource control by considering the quality of services, efficiency, and fairness. Then we try the "analysis and synthesis" of information dynamics on the Internet to forecast the spatial and temporal tendencies of resource use with the existence of a strong correlation among networks and human societies, and explore a framework for optimal control and design based on the information dynamics. Finally, based on these "fusion" and "analysis and synthesis", we further seek a novel autonomous information transmission architecture and accompanied technologies, in which information would autonomously move to whoever and/or whatever want it, to realize easy, effective and safe information exchange and delivery for all users in global.

【Expected results】

- (1) A more advanced optimization flexibly integrating diverse network resources is realized, which can be regarded as an enhancement of the recent Fixed Mobile Convergence (FMC) by "fusion".
- (2) A global optimization across the Internet and real societies from the human viewpoint could be achieved by "analysis and synthesis" of information dynamics, which might pioneer a new research area in network engineering.
- (3) A novel information transmission architecture for easy to use, effective and safe information exchange and delivery for all users in global could be explored, which might contribute a new design direction for accelerating retrieval, store, presentation of information.

【References by the principal researcher】

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- "Performance Comparison of Task Allocation Schemes Depending upon Resource Availability in a Grid Computing Environment", Hiroshi Yamamoto, Kenji Kawahara, Tetsuya Takine, and Yuji Oie, Special Issue on Parallel/Distributed Computing and Networking, IEICE Transactions on Information and Systems - Vol. E89-D, No. 2, pp. 459-468, Feb. 2006

【Term of project】 FY2006 - 2010

【Budget allocation】 13,300,000 yen

【Homepage address】

<http://www.ndrc.kyutech.ac.jp/en/index.html>