A Proposal of Semantic Analysis based Integrated Multi-Level Search System for Smart TV

Myung-Eun KIM*, Joon-Myun CHO*, Jeong-Ju YOO*, JinWoo HONG*, Sang-Ha KIM**

*Next Generation Smart TV Research Department, ETRI, 218 Gajeong-ro, Yuseong-Gu, Daejeon, 305-700, KOREA

**Department of Computer Science and Engineering, Chungnam National University, 99 Daehak-ro, Yuseong-gu, Daejeon, 305-764, KOREA

mekim@etri.re.kr, jmcho@etri.re.kr, jjyoo@etri.re.kr, jwhong@etri.re.kr, shkim@cnu.ac.kr

Abstract—**Aligned with the rapid change of broadcast environment TV is no longer than a passive device to receive a signal of terrestrial television broadcasting. A Smart TV is the new trend of integration of the Internet and Web 2.0 features into the modern television sets and set-top boxes. The users having much experience in a computer want to use a Smart TV alike. However, a Smart TV has yet to provide various user interface devices such as a mouse and a keyboard thus it is needed to develop new search technology to analyze user intents from a simple user keyword phrase and search the target contents from the multiple sources including broadcast network and Internet. In this paper, we proposed the framework of semantic analysis based integrated multi-level search system to improve search accuracy and expand search coverage. The proposed system can retrieve the user desirable multimedia contents from various sources at a time by analyzing an ambiguous user keyword phrase with ontological knowledge.**

Keyword— **Semantic Network, Multi-Level Search, Integrated Search, Smart TV**

Myung-Eun KIM received the B.S degree from Soonsil University, Seoul, Korea, in 1996, and the M.S. in computer science from Sogang University, Seoul, Rep. of Korea, in 1998. She joined the TongYang Systems, Seoul, Rep. of Korea in 1998. After three years, she moved to Electronics and Telecommunications Research Institute (ETRI), Daejeon, Rep. of Korea. She is currently working as a senior researcher of Smart TV Media Research Team at ETRI, Daejeon, Rep. of Korea. Her research interests include information retrieval technology, service and platform technologies for Smart TV, and the Social TV.

Joon-Myun CHO received his BS, MS and PhD in mechanical Engineering from Korea Advanced Institute of Science and Technology (KAIST) in 1993, 1995 and 2006, respectively. He joined ETRI, Daejeon, Rep. of Korea in 2007 and was involved with the URC (Ubiquitous Robotic Companion) project until 2011. He is currently working as a project leader in smart search and recommendation system development for smart TV project. His research interests include ontology-based knowledge base system and intelligent agent system.

Jeong-Ju YOO   received the BS and MS degree in Telecommunications in 1982 and 1984, respectively, from Kwangwoon University, Seoul, Korea. He received the Ph.D degree in computing science from Lancaster University, United Kingdom in 2001. Since 1984, he has been a Principal Member of Technical Staff in the Next Generation Smart TV Research Department of Electronics and Telecommunications Research Institute (ETRI), Korea. He was a Head of MPEG Korea delgates from 2007 to 2009 and he is a Director of Smart TV Media Research Team at ETRI. His research interests are in the area of QoS, video coding, media streaming, and multiscreen service technology of Smart TV.

Jin-Woo HONG received the BS and MS degree in electronic engineering from Kwangwoon University, Seoul, Korea, in 1982 and 1984, respectively. He also received the Ph.D degree in computing engineering from the same university in 1993. Since 1984, he has been with ETRI, Daejeon, Korea, as a principal researcher, where he is currently a managing director of the next generation Smart TV Research Department. From 1998 to 1999, he conducted research at Fraunhofer Institute in Erlangen, Germany, as a visiting researcher. His research interests include multimedia framework technology, broadcasting media and service, personal broadcasting, realistic media, and platform technology of Smart TV.

Sang-Ha KIM received the B.S. degree from Seoul National University, Seoul, Korea, in 1980, and the M.S. in chemical physics and Ph.D. degrees in computer science from University of Houston, Houston, USA, in 1984 and 1989, respectively. He joined the System Engineering Research Institute (SERI) in Korean Institute of Science and Technology (KIST), Seoul, Korea, as a senior research scientist in 1990. After two years, He moved into Chungnam National University, at which he is currently working as a professor.