

Footprint based Workflow Model for Analytical Task Automation

Minjae Park*, Jin Ma**, Hyunah Kim***, Hyun Ahn***, Kwnaghoon Pio Kim***

*Engineering Innovation Center, BISTel, Inc., Seoul, South Korea

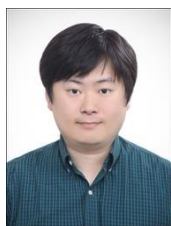
**National Institute of Supercomputing and Networking, KISTI, Daejeon, South Korea

*** Dept. of Computer Science, Kyonggi University, Suwon, Kyonggi-do, South Korea

mjpark@bistel.com, majin@kisti.re.kr, {hyuna486, hyahn, kwang}@kgu.ac.kr

Abstract— Generally, analytical tasks target some specific problem that requires engineering expertise to be solved efficiently. However, it is wasteful to use an engineer's expertise to address repetitive tasks that are performed iteratively. Therefore, in this paper, we propose a method to automate analytical tasks using the footprint of an approach previously followed by an engineer. Using this method, we can discover and create executable workflow models and use it to automate analytical tasks in manufacturing data analysis.

Keyword— Workflows, Processes, Workflow/Process Modeling, Footprint, Workflow Discovery



Minjae Park is a senior member of research staff at the solution R&D research center of BISTel, Inc., South Korea. He received B.S., M.S., and Ph.D. degrees in computer science from Kyonggi University in 2004, 2006, and 2009, respectively. His research interests include groupware, workflow systems, BPM, CSCW, collaboration theory, process warehousing and mining, workflow-supported social networks discovery and analysis, and process-aware factory automation systems.



Jin Ma is a Researcher at the Supercomputing R&D Center of KISTI (Korea Institute of Science and Technology Information), South Korea. He received B.S., M.S. degrees in computer software and computer science from Kwangwoon University in 2010, 2012, respectively. He had worked as member of research staff at the solution R&D research center of BISTel, Inc., South Korea. His research interests Big Data, Analysis System and Visualization, distributed system, BPM.



Hyunah Kim is a senior member of research staff at BIEE, Inc., and she is an adjunctive professor of the computer science department at Kyonggi University, South Korea. She received B.S. degree in computer science and engineering from Korea Nazarene University, and M.S. and Ph.D. degrees in computer science from Kyonggi University in 2005, and 2009, respectively. Her research interests include groupware, workflow systems, SCORM based e-Learning process modeling and management systems, e-Learning process mining techniques, and workflow-supported social networking knowledge discovery and analysis.



Hyun Ahn is a full-time Ph.D. student of computer science department and a graduate member of the collaboration technology research laboratory at Kyonggi University, South Korea. He received B.S. and M.S. degrees in computer science from Kyonggi University in 2011 and 2013, respectively. His research interests include workflow systems, BPM, scientific workflow systems, workflow-supported social and affiliation networks discovery, analysis, and visualization.



Kwanghoon Pio Kim is a full professor of computer science department and the founder and supervisor of the collaboration technology research laboratory at Kyonggi University, South Korea. He received B.S. degree in computer science from Kyonggi University in 1984. And he received M.S. degree in computer science from Chungang University in 1986. He also received his M.S. and Ph.D. degrees from the computer science department at University of Colorado Boulder, in 1994 and 1998, respectively. He had worked as researcher and developer at Aztek Engineering, American Educational Products Inc., and IBM in USA, as well as at Electronics and Telecommunications Research Institute (ETRI) in South Korea. In present, he is a vice-chair of the BPM Korea Forum. He has been in charge of a country-chair (Korea) and ERC vice-chair of the Workflow Management Coalition. He has also been on the editorial board of the journal of KSII, and the committee member of the several conferences and workshops. His research interests include groupware, workflow systems, BPM, CSCW, collaboration theory, Grid/P2P distributed systems, process warehousing and mining, workflow-supported social networks discovery and analysis, process-aware information systems, data intensive workflows, and process-driven Internet of Things.