

Preface

The purpose of the First International Symposium on Applied Computing and Information Technology (ACIT 2013) held on August 31–September 4, 2013 in Matsue City, Japan, was to bring together researchers, scientists, engineers, industry practitioners, and students to discuss, encourage, and exchange new ideas, research results, and experiences on all aspects of Applied Computers and Information Technology, and to discuss the practical challenges encountered along the way and the solutions adopted to solve them. The conference organizers have selected the best 12 papers from those accepted for presentation at the conference in order to publish them in this volume. The papers were chosen based on review scores submitted by members of the program committee and underwent further rigorous rounds of review.

In “[Intelligent Billboard Based on Ambient System \(IBBAS\)](#)”, Baker Alrubaiey, Morshed Chowdhury, and Atul Sajjanhar have designed and developed an Intelligent Bill Board based on Ambient System. This board is capable of interacting with humans in close proximity. A number of sensor devices are used in the board where sensors inputs (Bluetooth IDs and distance sensor readings) create an innovative form of user interaction with the board.

In “[Deriving Pauses for Obtaining Fundamental Movements in Traditional Skills](#)”, Teruhisa Hochin and Hiroki Nomiya try to derive pauses in order to obtain fundamental movements, which are considered to be important for transmitting traditional skills, from the movement of a worker or a player. This is due to the observation that the fundamental movements may relate to pauses. The fundamental movements are captured as similar changes in the speeds appearing everywhere.

In “[A Novel Approach to Design of an Under-Actuated Mechanism for Grasping in Agriculture Application](#)”, Alireza Ahrary and R. Dennis A. Ludena present a novel approach to mechanical design of underactuated robot finger with passive adaptive grasping. Three concepts of environment, mechanism, and control of passive adaptive grasping are also focused in our approach. The mechanical design of proposed underactuated robot finger is briefly described and experimental results in real environments are also given.

In “[Discovering Unpredictably Related Words from Logs of Scholarly Repositories for Grouping Similar Queries](#)”, Takehiro Shiraishi, Toshihiro Aoyama, Kazutsuna Yamaji, Takao Namiki, and Daisuke Ikeda present a method

to find related query words at the first step from logs of scholarly repositories. In particular, we try to find words which are related from the viewpoint of non-researchers. In this sense, these words are unpredictably related. A simple method to do this using the access log is that we treat queries which lead to the same paper as related.

In “[A Trichotomic Approach to Concept Capture and Representation: With its Application to Library Data Mining](#)”, Toshiro Minami, Sachio Hirokawa, Kensuke Baba, and Eriko Amano propose a method for specifying the concept that is too hard to describe in an exact way by a word or a phrase, by setting up the “relative distances” from three key concepts which we call a trichotomic approach to concept capture and representation, or description, by approximate means. Secondly, they demonstrate the usefulness of the trichotomic approach through a couple of case studies applied to library’s loan record analysis.

In “[Hard Optimization Problems in Learning Tree Contraction Patterns](#)”, Yasuhiro Okamoto and Takayoshi Shoudai discuss two optimization versions of the MINL problem, which are called MINL with Tree-size Maximization (MAX MINL) and MINL with Variable-size Minimization (MIN-MAX MINL). We show that MAX MINL is NP-complete and MIN-MAX MINL is MAX SNP-hard.

In “[A Web Page Segmentation Approach Using Seam Degree and Content Similarity](#)”, Jun Zeng, Brendan Flanagan, Qingyu Xiong, Junhao Wen, and Sachio Hirokawa propose two parameters: seam degree and content similarity, to indicate the coherent degree of a page block. Instead of analyzing predefined heuristics or visual cues, our method utilizes the visual and content features to determine whether a page block should be divided into smaller blocks. We also proposed a principled page segmentation method using these two parameters.

In “[Improving Particle Swarm Optimization Algorithm and Its Application to Physical Travelling Salesman Problems with a Dynamic Search Space](#)”, Benoît Vallade and Tomoharu Nakashima address an improvement idea for the Particle Swarm Optimization Algorithm (PSO) and its implementation on a Traveller Salesman Problem-based competition. As a search algorithm, the PSO is used to tune a set of parameters, which usually take their values in static search spaces. This chapter proposes a solution to use effectively the PSO algorithm on optimization problems using parameters that take their values in dynamic space.

In “[Experimental Implementation of a M2M System Controlled by a Wiki Network](#)”, Takashi Yamanoue, Kentaro Oda, and Koichi Shimozone discuss an experimental implementation of an M2M system, which is controlled by a wiki network. This M2M system consists of mobile terminals at remote places and wiki servers on the Internet. A mobile terminal of the system consists of an Android terminal and it may have an Arduino board with sensors and actuators. The mobile terminal can read data from not only the sensors in the Arduino board but also wiki pages of the wiki servers.

In “[Personal Ontology Extraction Considering Content Concordance from Tagging to Webpages in Similar SBM Users](#)”, Fumiko Harada and Hiromitsu Shimakawa have studied a method to extract hierarchical and synonymous relationships among tagged phrases on a social bookmark (SBM) for an individual

SBM user. It detects the relationships from webpage clusters with the same tagged phrases derived from the bookmarks shared in the target and his similar SBM users. However, noisy tagging violating personal phrase meaning degrades its detection accuracy. This chapter proposes a method to improve such drawback.

In “[Psychophysiological and Behavioral Evaluation of the Process of Mastering Skills: To Select Appropriate Indices for a Target Movement](#)”, Hiroko Sawai, Kazune Tomotake, Yasuharu Ishii, Keisuke Ueno, and Emi Koyama present a study to evaluate the early process of mastering skills to reveal skill factors including pause and adjustment in producing traditional handicrafts using psychophysiological and behavioral indices. The indices were measured in two experiments. Tasks that needed obtaining skill factors were performed. As a result, heart rates, time-series behaviors of electrooculogram (EOG), and wrist activities during tasks, and subjective scores before tasks reflected the difference in the product quality in the early process of mastering skills.

In “[Frameworks for Adaptive Human Management Systems Based on MDA](#)”, Haeng-Kon Kim and Roger Y. Lee describe the initial investigation in the fields of MDA and generative approaches to SOA. Our view is that MDA aims at providing a precise framework for generative software production. Unfortunately many notions are still loosely defined (PIM, PSM, etc.). We propose here an initial exploration of some basic artifacts of the MDA space to SOA. Because all these artifacts may be considered as assets for the organization where the MDA is being deployed with SOA, we are going to talk about MDA and SOA abstract components to apply an e-business application.

It is our sincere hope that this volume provides stimulation and inspiration, and that it will be used as a foundation for works to come.

Satoshi Takahashi



<http://www.springer.com/978-3-319-05716-3>

Applied Computing and Information Technology

Lee, R.Y. (Ed.)

2014, XIII, 186 p. 110 illus., Hardcover

ISBN: 978-3-319-05716-3