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Program

Opening

Keynote 1

Computation Partitioning for Mobile Cloud Applications

Mobile Cloud Computing (MCC) offers great opportunities for mobile service industry, allowing mobile devices to utilize the elastic resources offered by the cloud. By using MCC technologies, developers can create advanced applications on mobile devices, such as multimedia applications, and augmented reality, which far more exceed the capability of the devices. However, MCC faces challenges, among which the computation partitioning problem studies how to optimally divide an application into modules and decide which modules should be offloaded to the cloud for improving the system and application performance.

There are various research issues. From the mobile side, the partitioning of applications should dynamically change with the user's mobile environments which may vary due to the user's mobility. From the cloud side, computation partitioning should support multiuser applications to gain profit through realizing the economic of scale. In this talk, I will first present the state of arts of research in computation partitioning in terms of application modeling, profiling, optimization, and distributed execution. I will then describe how to develop a systematic approach to support computation partitioning from three different dimensions, namely application, user, and environment. I will also present our work on addressing the challenging issues in the three respective dimensions.

Coffee Break

S1: Social Computing

Dynamic Social Influence Modeling from Perspective of Gray-scale Mixing Process Zi Wang, Ryoichi Shinkuma and Tatsuro Takahashi (Kyoto University, Japan) pp. 1-6

Extracting Local Event Information from Micro-blogs for Trip Planning

Wataru Yamada (NTT Docomo, Japan); Haruka Kikuchi (NTT DOCOMO, INC., Japan); Keiichi Ochiai (NTT DOCOMO, Japan); Daisuke Torii (NTT DOCOMO Inc., Japan); Hiroshi Inamura (NTT DOCOMO, Inc. & Research Laboratories, Japan); Ken Ohta (NTT DoCoMo, Inc., Japan) pp. 7-12

Breadcrumb SNS: Asynchronous Empathy Chat for Smart City Residents

Jae Yeon Ju, Jaesang Yoo, Jooyeon Lee and Heejung Kwon (Yonsei University, Korea) pp. 13-18

Lunch

S2: Cognitive Radios and Ad Hoc Networks

Two-stage Spectrum Sensing for Cognitive Radio under Noise Uncertainty Kanabadee Srisomboon (King Mongkut's University of Technology North Bangkok, Thailand); Wilaiporn Lee and Akara Prayote (King Mongkut's University of Technology North Bangkok, Thailand) pp. 19-24

A Self-diagnosis Method for Spectrum Sensing Algorithm in Cognitive Radio Networks Jen-Feng Huang (National Taiwan University, Taiwan); Guey-Yun Chang, Shin-Fa Huang and Jyun-Fong Wang (National Central University, Taiwan) pp. 25-29

Spread Spectrum/Binary Countdown Scheme with GMPSC for Multi-Hop Wireless Network Takuya Eto and Hiromasa Habuchi (Ibaraki University, Japan); Koichiro Hashiura (Akita Prefectural University, Japan) pp. 30-35 **Modeling the Success Transmission Rate in Aloha MANETs with Binomial Point Process** Yin Chen (Keio University, Japan); Jinxiao Zhu (Future University Hakodate, Japan); Yulong Shen (Xidian University & Wayne State University, USA); Xiaohong Jiang (Future University-Hakodate, Japan) pp. 36-41

Coffee Break

S3: Novel Applications and User Experiences

Towards Activity-based App Search

Andrea G. Forte (AT&T Labs & Security Research Center, USA); Wei Wang (AT&T Security Research Center, USA) pp. 42-47

Development of Avatar creation Smartphone Application reflecting expression of Japanese comics character

Reiko Kuwabara (Graduate School of Engineering, Toyo University, Japan) pp. 48-52

Exploring UX Issues in Quantified Self Technologies

Jeungmin Oh (Korea Advanced Institute of Science and Technology, Korea); Uichin Lee (KAIST, Korea) pp. 53-59

Short Break

One Minute Madness

Demos and Posters Preview

Demos and Posters Session w/ Reception

Indoor User Navigation for Enhanced Quality of Experience in Wireless Local Area Networks Sheng-min Chiou and Shih-Hau Fang (Yuan Ze University, Taiwan); Chiapin Wang (National Taiwan Normal University, Taiwan); Yu-Hsuan Sylvia Yang and Wen-Hsing Kuo (Yuan Ze University, Taiwan); Tesheng Tsai (National Taiwan Normal University, Taiwan) pp. 60-61

Using Mobile Application for Long-Term Care System

Hsiao-Hui Li (Toko University, Taiwan); Yuan-Hsun Liao (National Kaohsiung Marine University, Taiwan); Chih-Tsan Chang (National Chung Cheng University, Taiwan) pp. 62-63

An Architecture for Adhesive Mobile Crowdsourcing Application

Hazleen Aris (Universiti Tenaga Nasional, Malaysia) pp. 64-65

A Real-Time Fall Detection System Using a Wearable Wireless Gait Analysis Sensor and a Support Vector Machine (SVM) Classifier

Naohiro Shibuya and Bhargava Teja Nukala (Texas Tech University, USA); Amanda Rodriguez (Texas Tech University Health Sciences Center, USA); Jerry Tsay (Texas Tech University, USA); Tam Nguyen and Steven Zupancic (Texas Tech University Health Sciences Center, USA); Donald Lie (Texas Tech University, USA) pp. 66-67

Comparing Nape Vs. T4 Placement for a Mobile Wireless Gait Analysis Sensor Using the Dynamic Gait Index Test

Bhargava Teja Nukala and Naohiro Shibuya (Texas Tech University, USA); Amanda Rodriguez (Texas Tech University Health Sciences Center, USA); Jerry Tsay (Texas Tech University, USA);

Tam Nguyen and Steven Zupancic (Texas Tech University Health Sciences Center, USA); Donald Lie (Texas Tech University, USA) pp. 68-69

A Post-Haiyan Community Level Mobility Model

Jovilyn Therese B Fajardo (Nagoya University, Japan); Keiichi Yasumoto and Hiroyuki Seki (Nara Institute of Science and Technology, Japan) pp. 70-71

Climate Condition That Mostly Affects the Change of Tweet Content

Taku Ito (The University of Tokyo, Japan); Yusuke Fukazawa (NTT DOCOMO, Inc., Japan); Dandan Zhu and Jun Ota (The University of Tokyo, Japan) pp. 72-73

A Method to Improve Network Performance of Proxy Mobile IPv6

Yuta Watanabe, Yoshitaka Nakamura and Osamu Takahashi (Future University Hakodate, Japan) pp. 74-75

Double Constraints Adaptive Energy Detection for Spectrum Sensing in Cognitive Radio Networks

Kanabadee Srisomboon (King Mongkut's University of Technology North Bangkok, Thailand); Akara Prayote and Wilaiporn Lee (King Mongkut's University of Technology North Bangkok, Thailand) pp. 76-77

Web-based Integrated Visualization Service for Monitoring Urban Public Spaces

Akio Sashima, Ikushi Yoda, Mitsuru Kawamoto and Koichi Kurumatani (AIST, Japan) pp. 78-79

Performance Evaluation of WMN Routing Methods Considering Amount of Control Packets

Shizuya Irimoto, Yuta Maruoka and Kazunori Ueda (Kochi University of Technology, Japan) pp. 80-81

Received Signal Strength Indication for Movement Detection

Omar Alfandi (University of Goettingen & Zayed University, Germany); Arne Bochem (University of Göttingen, Germany); Kirill Bulert and Alwin Maier (Uni Goettingen, Germany); Dieter Hogrefe (University of Goettingen, Germany) pp. 82-83

Effects of Erhu Distance Learning on Cognitive and Upper Extremity Function in Elderly Yu-Huei Su (National Hsinchu University of Education, Taiwan); Yaw-Jen Lin (Central Taiwan

Yu-Huel Su (National Hsinchu University of Education, Taiwan); Yaw-Jen Lin (Central Taiwan University of Science and Technology, Taiwan); Mei-Ju Su (Yuanpei University of Medical Technology, Taiwan); Heng-Shuen Chen (National Taiwan University, Taiwan) pp. 84-85

A Robot Control System for Video Streaming Services by Using Dynamic Encoded QR Codes Masaki Ogawa (Keio University & Hide Tokuda lab, Japan); Takuro Yonezawa, Yuuki Nishiyama, Jin

Nakazawa and Hideyuki Tokuda (Keio University, Japan) pp. 86-87

A Cloud Based Bluetooth Low Energy Tracking System for Dementia Patients

Yaw-Jen Lin (Central Taiwan University of Science and Technology, Taiwan); Heng-Shuen Chen (National Taiwan University, Taiwan); Mei-Ju Su (Yuanpei University, Taiwan) pp. 88-89

Continuous Spine Care Service for Elderly

Mei-Ju Su (Yuanpei University, Taiwan); Yaw-Jen Lin (Central Taiwan University of Science and Technology, Taiwan); Heng-Shuen Chen (National Taiwan University, Taiwan) pp. 90-91

Prototype Development of " Integrative Education Environmental System Using Smart Phone " and Proposal of Operational Model

Kazuya Murata and Takayuki Fujimoto (Toyo University, Japan) pp. 92-93

Proposal of Appreciation Support System to Reflect the Opinion of Visitor About Art Objects in Art Museum

Kouji Fujita (Graduate School of Engineering, Toyo University, Japan); Takayuki Fujimoto (Toyo University, Japan) pp. 94-95 **Demand Map-Based Data Dissemination Scheme for Location Dependent Data in VANETs** Yuya Niimi and Susumu Ishihara (Shizuoka University, Japan)

pp. 96-97

Proposal of In-Network Caching System with Dynamic Content Pre-fetching Mechanism

Atsushi Yonemura and Sadao Obana (The University of Electro-Communications, Japan); Teruyuki Hasegawa (KDDI R&D Laboratories Inc., Japan) pp. 98-99

Support System for Improving Golf Swing by Using Wearable Sensors

Takayuki Mitsui, Suhua Tang and Sadao Obana (The University of Electro-Communications, Japan) pp. 100-101

Keynote 2

Design and Implementation of New Public Transportation System for Smart City Hakodate

Smart city is a city with nerv systems, which consist of interconnected sensors, computational systems and actuators. By sensing the status of the city and responding to it via various kind of actuators, a city can be more efficient in its operations and more convenient for citizens.

A transportation system is one of the important infrastructure of a city. We are designing a new transportation service to be implemented in Hakodate city. We named it Smart Access Vehicle System (SAVS). The basic idea is to integrate the current bus and taxi system into a single computer controlled system that runs in real-time to satisfy mobility demands of citizens.

The central computer system keeps track of the locations of all vehicles through GPS, and computes their future routes. To fetch and deliver a new passenger, a vehicle with least detour and delay is selected. This kind of complex computation is realizable only by intensive use of IT.

SAVS utilizes IT in two essential ways. One is for the real-time planning of the routes of vehicles. The other is utilization of multiagent simulation for the design and evaluation of SAVS.

Coffee Break

S4: M2M & Mobile Applications

Applicability of a layered architecture adopting distributed data processing to M2M communications

Masafumi Katoh (Fujitsu Labotatories Ltd., Japan); Izuru Sato (Fujitsu Labs. LTD., Japan); Ken-ichi Fukuda (Fujitsu Laboratories ltd., Japan) pp. 102-107

CSDA: Rule-based Complex Sensor Data Aggregation System for M2M Gateway

Yuichi Nakamura (Hitachi Solutions, Ltd. & Okayama University, Japan); Akira Moriguchi (Hitachi Solutions, Ltd, Japan); Toshihiro Yamauchi (Okayama University, Japan) pp. 108-113

Design and Implementation of an Energy-Efficient Lighting System Driven by Wireless Sensor Networks

Motoi Okada, Hiroto Aida, Hikaru Ichikawa and Mitunori Miki (Doshisha University, Japan) pp. 114-119

Estimation of Bus Traveling Section Using Wireless Sensor Network

Hajime Adachi, Hidekazu Suzuki, Kensaku Asahi, Yukimasa Matsumoto and Akira Watanabe (Meijo University, Japan)

pp. 120-125

Lunch

Panel

Young researchers panel ~ "Ubiquitous in real life: now and future"

Abstract: In these years, ubiquitous computing comes closer to our actual life. It was realized by various progresses in various fields, such as network, smartphone, gadget, cloud etc. In this panel, I invite the following active young researchers and would like to discuss about the future ubiquitous world based on their current research progresses. I hope that all the attendee will get some idea for each future research and service. Moderator: Yutaka Arakawa (Associate Professor, Nara Institute of Science and Technology, Japan) Kai Kunze (Associate Professor, Keio University, Japan) – Eyewear Computing (JINS MEME) Adiyan Mujibiya (Researcher, Rakuten Inc., Japan) – Actual service between Online and Offline Takuro Yonezawa (Assistant Professor, Keio University, Japan) – Urban Sensing Project, and Devices Uichin Lee (Associate Professor, Korea Advanced Institute of Technology, Korea) – Ubiquitous computing and technological addiction

Coffee Break

S5: Wireless Networks and Security

Adaptive transmission control for communication systems with unstable renewable energy sources

Qishen Wu, Sho Suzuki, Ryoichi Shinkuma and Tatsuro Takahashi (Kyoto University, Japan) pp. 126-131

Improving the spatial reuse of IEEE 802.11 WLAN by adaptive carrier sense threshold of access points based on node positions

Kodai Murakami, Tatsuya Ito and Susumu Ishihara (Shizuoka University, Japan) pp. 132-137

Outage Performance of Secure Multicasting in the Presence of Multiple Eavesdroppers

Jinxiao Zhu (Future University Hakodate, Japan); Yin Chen (Keio University, Japan); Yoshitaka Nakamura (Future University Hakodate, Japan); Xiaohong Jiang (Future University-Hakodate, Japan); Osamu Takahashi (Future University Hakodate, Japan); Norio Shiratori (Tohoku University, Japan)

pp. 138-142

Trust Evaluation Method Adapted to Node Behavior for Secure Routing in Mobile Ad hoc Networks

Sayaka Umeda, Sonoko Takeda and Hiroshi Shigeno (Keio University, Japan) $_{\rm pp.\ 143-148}$

Excursion and Gala Dinner

S6: Novel Mobile Interactions

Enhancing Init Scheme for Improving Bootup Time in Mobile Devices

Geunsik Lim and Jae-young Hwang (Samsung Electronics, Korea); Kyungmin Park (Seoul National University, Korea); Sang-bum Suh (Samsung Electronics, Korea) pp. 149-154

Vinteraction: Vibration-based Information Transfer for Smart Devices

Takuro Yonezawa, Jin Nakazawa and Hideyuki Tokuda (Keio University, Japan) pp. 155-160

Passive User Identification Using Sequential Analysis of Proximity Information in Touchscreen Usage Patterns

Vadim Zaliva (Carnegie Mellon University, USA); Ying Zhang (Carnegie Mellon Silicon Valley, USA); William Melicher and Shayan Saha (Carnegie Mellon University, USA) pp. 161-166

S7: Mobility Matters

Indoor Positioning Method Integrating Pedestrian Dead Reckoning with Magnetic Field and WiFi Fingerprints

Ryoji Ban, Katsuhiko Kaji, Kei Hiroi and Nobuo Kawaguchi (Nagoya University, Japan) pp. 167-172

Performance Evaluation of Host-Based Mobility Management Schemes in the Internet Oshani HenakaRalalage, Kunitake Kaneko and Fumio Teraoka (Keio University, Japan)

pp. 173-178

DTN MapEx: Disaster Area Mapping through Distributed Computing over a Delay Tolerant Network

Edgar Marko Trono (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology & NAIST, Japan); Morihiko Tamai and Keiichi Yasumoto (Nara Institute of Science and Technology, Japan) pp. 179-184

A Cross Validation of Network System Models for Delay Tolerant Networks

Shigeru Kaneda (Space-Time Engineering, LLC., USA); Teruhiro Mizumoto (Space-time Engineering Japan, Japan); Taka Maeno (Space-Time Engineering Japan, Inc., Japan); Mineo Takai (University of California, Los Angeles & Osaka University, USA); Shigeru Kashihara (Nara Institute of Science and Technology, Japan); Hirozumi Yamaguchi and Teruo Higashino (Osaka University, Japan) pp. 185-190

Closing