

ISARC 2006 Session Table

		October 3 (Tuesday)			October 4 (Wednesday)			October 5 (Thursday)				
		Masaru Ibuka Auditorium (1st floor)	Conference Room No. 1 (3rd floor)	Conference Room No. 3 (3rd floor)	Masaru Ibuka Auditorium (1st floor)	Conference Room No. 1 (3rd floor)	Conference Room No. 3 (3rd floor)	Masaru Ibuka Auditorium (1st floor)	Conference Room No. 1 (3rd floor)	Conference Room No. 3 (3rd floor)		
9:00	Registration				Registration			Registration			9:00	
10:00	Opening Ceremony				A4 Planning & Management (1)	B4 OS: Advanced Production Technologies of Industrialized Houses	C4 OS: Autonomous Systems for Construction	A8 Sensing & Imaging Technology in Construction Management	B8 Logistics and Robot Control Technology	C8 Plant & Dismantling	9:30	
10:20	Plenary Speech				Coffee Break		Coffee Break		10:45			
10:40	Keynote Lecture				A5 Planning & Management (2)	B5 OS: Interdisciplinary Study on Construction Management & Engineering	C5 Mobile Robot Navigation	A9 Automation & Robotization in Civil Engineering (1)	B9 Building Construction Application System	C9 Autonomous Robotic System	11:05	
12:10	Lunch (RIHGA Royal Hotel Tokyo)			Lunch (RIHGA Royal Hotel Tokyo)			Lunch (RIHGA Royal Hotel Tokyo)			12:20		
13:40	A1 Future Outlook for Automation & Robotization in Civil Engineering	B1 Design and Construction Information System	C1 OS: Robotic House: Robots & Ambient Intelligence for Amenity Life	A6 OS: Automation & Robotization in Construction Maintenance & Inspection	B6 OS: RT & IT in Construction (1)	C6 Robot Control System (1)	A10 Automation & Robotization in Civil Engineering (2)	B10 Knowledge Engineering and Management Technology	C10 Construction Planning & Management Methods	13:40		
15:10	Coffee Break			Coffee Break			Coffee Break			15:10		
15:30	A2 OS: Automation & Robotization in Marine Construction (1)	B2 Design, Planning and Management System	C2 Construction Robot (1)	A7 Information Technology in Construction Management	B7 OS: RT & IT in Construction (2)	C7 Robot Control System (2)	A11 Automation & Robotization in Civil Engineering (3)	B11 IT Usage Management System		15:30		
17:00	Break			Break						17:00		
17:20	A3 OS: Automation & Robotization in Marine Construction (2)	B3 Construction Planning & Management Methods	C3 Construction Robot (2)	Special Lecture						17:20		
18:35	*OS=Organized Session			RIHGA Royal Hotel Tokyo						18:00		
20:00				Award Ceremony & Buffet Party								

Conference Room No. 2 (3rd floor)
 Panel & Poster Display (Open from the afternoon of October 3 until the end of the symposium)

ISARC 2006 Program

October 3 (Tuesday)

Masaru Ibuka Auditorium (1st floor)

Opening Ceremony (10:00 – 10:20)

Chair: T. Arai (Chair of the ISARC 2006 Working Committee, Osaka University)

- 1) Opening Address
Naruo Kano (Chair of the ISARC 2006 Organizing Committee, Waseda University)
- 2) Guest Address
Taizo Takahashi (Ministry of Economy, Trade and Industry)
Toshimitsu Muramatsu (Ministry of Land, Infrastructure and Transport)

Plenary Speech (10:20 – 10:40)

Chair: T. Arai (Chair of the ISARC 2006 Working Committee, Osaka University)

- **WaKaGaCAR: Wadokei Karakuri Gattai Construction Automation Robotics**
Thomas Bock, IAARC President, Technical University Munich, Germany

Keynote Lecture (10:40 – 12:10)

Chair: T. Kanzaki (Chair of the ISARC 2006 Program Subcommittee, Kagawa University)

- **The *Chikyū* and Ocean Drilling Science**
Asahiko Taira, Shinichi Kuramoto, Daniel Curewithz, Japan Agency for Marine-Earth Science and Technology, Japan

Session A1 Future Outlook for Automation & Robotization in Civil Engineering (13:40 – 15:10)

Chair: T. Yoshida (Advanced Construction Technology Center)

- **Automation of Road Construction – The State of the Art in Europe**
Rauno Heikkilä, Mika Jaakkola, University of Oulu, Finland
- **Identifying the Demand for Innovative Future Construction Technology**
Hyoungkwan Kim, Kyung Hwan Cho, Hyo-Jin Kim, Moon Kyum Kim, Seung Heon Han, Sang Hyuk Park, Yonsei University, Korea
- **Research Planning Methodology for Technology Fusion in Construction**
Seung-Heon Han, Hyo-Jin Kim, Kyung Hwan Cho, Moon Kyum Kim, **Hyoungkwan Kim**, Sang-Hyuk Park, Yonsei University, Korea
- **Deployment of Construction Robots Applying the Information Technology and Network System**
Shigeo Kitahara, Kumagaigumi Co.,Ltd, Takashi Yoshida, Nishimatsu Construction Co.,Ltd, Japan
- **Introduction to the General Technology Development Project: Research and Development of Advanced Execution Technology by Remote Control Robot and Information Technology**
Hiroshi Yamamoto, Yutaka Ishimatsu, Takashi Yamaguchi, Public Works Research Institute, Katsumi Uesaka, Koichi Aritomi, Yoichi Tanaka, National Institute for Land and Infrastructure Management, Japan
- **Themes and Prospects of Automation and Robotics in Urban Infrastructure Renewal**
Tadashi Kanzaki, Kagawa University, Japan

October 3 (Tuesday)

Session A2 OS: Automation & Robotization in Marine Construction (1) (15:30 – 17:00)

Chairs: H. Takesue (Taisei Corporation)

K. Kato (TOA CORPORATION)

- **Experiment on Teleoperation of Underwater Backhoe with Haptic Information**
Taketsugu Hirabayashi, Port and Airport Research Institute, Takashi Yamamoto, SAEKI KENSETSU KOGYO CO.,LTD, Hiroaki Yano, Hiroo Iwata, University of Tsukuba, Japan
- **Autonomous Underwater Towed Vehicle with Various Navigation Modes**
Tetsuya Shiraishi, Jin-Kyu Choi, Toshinari Tanaka, Port and Airport Research Institute, Japan
- **Development of Automated Shoreline Surveying System Using Amphibious Walking Robot - The Design Concepts and the 1st Field Experiment -**
Toshinari Tanaka, Tetsuya Shiraishi, Port and Airport Research Institute, Japan
- **Evaluation of Operativeness Concerning Interface of Remote Controlled Backhoe**
Taketsugu Hirabayashi, Port and Airport Research Institute, Hiroyuki Yasuta, SAEKI KENSETSU KOGYO CO.,LTD, Hiroaki Yano, Hiroo Iwata, University of Tsukuba, Japan
- **Highly Accurate Guidance Control to Dumping Position by Sea Hunter System --Applied to Mountain-like Mound Construction on Seafloor--**
Minoru Masuda, Ei Fujiyama, TOA CORPORATION, Japan
- **Development of Unmanned Caisson Installation System (UCIS)**
Takumi Manabe, Tatsuya Hirayama, PENTA-OCEAN CONSTRUCTION CO.,Ltd., Japan

Session A3 OS: Automation & Robotization in Marine Construction (2) (17:20 – 18:35)

Chairs: H. Takesue (Taisei Corporation)

K. Kato (TOA CORPORATION)

- **Development of a Compact Hybrid Underwater Vehicle Using Variable Vector Propeller**
Yutaka Nagashima, Sasebo National College of Technology, Nobuyoshi Taguchi, Industrial Technology Center of Nagasaki, Takakazu Ishimatsu, Nagasaki University, Japan
- **AUV Navigation Based on Multi-Sensor Fusion for Breakwater Observation**
Hayato Kondo, Tokyo University of Marine Science and Technology, Toshihiro Maki, Tamaki Ura, Takashi Sakamaki, The University of Tokyo, Japan

Conference Room No. 1 (3rd floor)

Session B1 Design and Construction Information System (13:40 – 15:10)

R. Yoshitake (Fujita Corporation)

- **Tangible User Interface Design for Lower Limb Disabled Children – A Composite Function of Toy Accompanying Children at Home**
Yu-Shu Chen, National Yunlin University of Science & Technology, Hong-Sheng Chen, Ling-Tung University, Taiwan
- **Using DSM and fmGA to Determine the Optimal Design Process for Engineering Design Projects**
Chung-Wei Feng, Yu-Chuan Yeh, National Cheng Kung University, Taiwan
- **TRIVERA: An Efficient Tool for Cost Integration into 4D Models**
Katherine A. Liapi, University of Patras, Greece, Theodora Paschoudi, IPA, Netherlands

October 3 (Tuesday)

Session B2 Design, Planning and Management System (15:30 – 17:00)

Chair: K. Iwanami (Toda Corporation)

- **System Requirement Analysis of a Construction Delay Analysis System**
Jyh-Bin Yang, Chih-Kuei Kao, Yi-Yao Lee, Chung Hua University, Taiwan
- **A Framework for Exploring ICTM Impact on Building Design and Management Applied to a Hospital Development Project: Proposing ICTM to Building Design and Management for Information Consistent Control of Construction and Service Robots**
Anita Moun, Norwegian University of Science and Technology, Norway, **Thomas Bock**, TU Muenchen, Germany
- **Constitution of Design Management System for Curtain Wall**
Hong-Kyoon Lim, Sang-Ho Yoon, Sang-Woo Park, Sang-Jun Park, Jae-Youl Chun, Dankook University, Korea
- **Benchmarking Technological Competitiveness of Precast Construction through Patent Map Analysis**
Wen-der Yu, Shao-tsai Cheng, You-lin Shie, Shao-Shung Lo, Chung Hua University, Taiwan
- **Quantifying Benefits of Knowledge Management System –A Case Study of an Engineering Consulting Firm**
Wen-der Yu, Pei-lun Chang, Chung Hua University, Shen-jung Liu, China Engineering Consultants Inc., Taiwan

Session B3 Construction Planning and Management Methods (17:20 – 18:35)

Chair: Y. Tani (Penta-Ocean Construction Co., Ltd.)

- **Assessment and Comparison of Technology Utilization in the Taiwanese and American Industries**
Li-Ren Yang, Tamkang University, Chung-Fah Huang, National Kaohsiung University of Applied Sciences, Taiwan, James T. O'Connor, University of Texas at Austin, USA
- **Analysis of Construction Inventive Patents Based on TRIZ**
Shao-tsai Cheng, Wen-der Yu, Chih-ming Wu, Ruey-sen Chiu, Chung Hua University, Taiwan
- **Life Cycle Management and Assessment of High-Tech Construction Projects**
Chih-chiang Chang, Lee-kuo Lin, Chien-chih Lin, National Taipei University of Technology, Hui-chi Lin, National Dong Hwa University, Taiwan
- **Mandatory Implementation Strategy of the Improvement of Existing Buildings in Taiwan**
Wen-Hsiung Hsiao, Sy-Jye Guo, National Taiwan University, Ming-Teh Wang, Taiwan Construction Research Institute, Chun-Nen Huang, Kainan University, Chao-Hung Lu, Ministry of the Interior, Taiwan

Conference Room No. 3 (3rd floor)

Session C1 OS: Robotic House- Robots and Ambient Intelligence for Amenity Life

Chair: T. Arai (Osaka University)

(13:40 – 15:10)

- **Environment Design for Human-Robot Symbiosis - Introduction of WABOT-HOUSE Project -**
Shigeki Sugano, Yuko Shirai, Soungho Chae, Waseda University, Japan
- **Ubiquitous Spot Service for Robotic Environment**
Kenichi Ohara, University of Tsukuba, Bong Keun Kim, Tamio Tanikawa, Kohtaro Ohba, National Institute of Advanced Industrial Science and Technology, Japan

October 3 (Tuesday)

- **Pose Estimation of Construction Materials Using Multiple ID Devices for Construction Automation**
Tomohiro Umetani, Nagoya City University, Kenji Inoue, Tatsuo Arai, Osaka University, Japan
- **Human-Robot Coexistence in Robot-Aided Apartment**
R. Correal, A. Jardón, S. Martínez, R. Cabás, A. Giménez, C. Balaguer, University Carlos III of Madrid, Spain
- **Development of an Adaptable System for Effective Utilization of Architectural Space**
Soungcho Chae, Naruo Kano, Satoshi Kobayakawa, Waseda University, Masayuki Kato, KATO Institute of Structural Engineering, Japan
- **Cooperative Monitoring by Fixed Cameras and Moving Cameras**
Sadaaki Kunimatsu, Hironori Kumeno, Naoko Tsukuda, Tomohito Takubo, Kenji Inoue, Tatsuo Arai, Osaka University, Yasushi Mae, University of Fukui, Tomohiro Umetani, Nagoya City University, Japan

Session C2 Construction Robot (1) (15:30 – 17:00)

Chair: S. Kitahara (Kumagaigumi Co., Ltd.)

- **A Short History of Construction Robots Research & Development in a Japanese Company**
Tetsuji Yoshida, Shimizu Corporation, Japan
- **Set Up of a Robotized System for Interior Wall Painting**
B. Naticchia, A. Giretti, A. Carbonari, Polytechnic University of Marche, Italy
- **Development of a Block Transfer Device Using Net Chains for Automation and Labor Saving**
Hitoshi Noguchi, Port and Airport Research Institute, Japan
- **The Application Research of Mobile Robots with Forklift-Driving-Wheels Capable to Ascend and Descend Stairs**
Hirofumi Niimi, Noriyoshi Douhara, College of Industrial Technology, Japan
- **Development of an Air Volume Measuring Instrument: WINSPEC**
Kouetsu Tanaka, Shintaro Sakamoto, Yasunori Abe, Shinryo Corporation, Japan
- **Development of Small-Size Window Cleaning Robot by Wall Climbing Mechanism**
Tohru Miyake, Hidenori Ishihara, Ryu Shoji, Shunichi Yoshida, Kagawa University, Japan

Session C3 Construction Robot (2) (17:20 – 18:35)

Chair: T. Yoshida (Shimizu Corporation)

- **A Four-Leg Locomotion Robot for Heavy Load Transportation**
Kiyoshi Kuroi, Hidenori Ishihara, Kagawa University, Japan
- **Climbing Up Onto Steps for Limb Mechanism Robot "ASTERISK"**
Shota Fujii, Kenji Inoue, Tomohito Takubo, Tatsuo Arai, Osaka University, Japan
- **Multi-Arm Mobile Robot for Hazardous Nuclear Decommissioning Tasks**
Mohamed J. Bakari, Derek W. Seward, E. M. Shaban, Rahee Y. Agate, Lancaster University, UK
- **Rescue Robot "T-52 Enryu"**
Shiro Fujita, Katsuyuki Baba, Daisaku Sudoh, Tmsuk Co., Ltd., Japan
- **Using Rescue Robots to Increase Construction Site Safety**
Winai Chonnaparamutt, Andreas Birk, International University Bremen, Germany

October 4 (Wednesday)

Masaru Ibuka Auditorium (1st floor)

Session A4 Planning and Management (1) (9:30 – 10:45)

Chair: H. Yamamoto (Public Works Research Institute)

- **Productivity in Rail Construction: Lessons Learned from the Development of the RHEDA 2000 Track Construction System**
Ger Maas, Eindhoven University of Technology, Theo Winter, BAM Rail, The Netherlands, Tanja Margarete Rickes, RAIL.ONE, Germany
- **Example of Experimental Use of 3D Measurement System for Construction Robot Based on Component Design Concept**
Hiroshi Yamamoto, Yutaka Ishimatsu, Public Works Research Inst., **Syuji Ageishi**, Naohiro Ikeda, Japan Construction Method and Machinery Research Institute, Ken Endo, Tokyu Construction Co.,Ltd, Minoru Masuda, Toa Corporation, Masayuki Uchida, GNSS Technologies Co.,Ltd, Hiroyoshi Yamaguchi, Komatsu Engineering Corp., Japan
- **Development of the Construction Waste Management Performance Evaluation Tool (WMPET)**
Jee-Hye Kim, Jae-Moon Kim, Hee-Sung Cha, Dong-Woo Shin, Ajou University, Korea

Session A5 Planning and Management (2) (11:05 – 12:20)

Chair: (W. Sato, Tokyo Electric Power Company)

- **Fully Integrated Web-Based Risk Management Systems for Highly Uncertain Global Projects**
Seung Heon Han, Du Yon Kim, Hyoungkwan Kim, Yeonil Chung, Heedae Park, Seokjin Choi, Yonsei University, Korea
- **Improving Traditional Earned Value Management by Incorporating Statistical Process Charts**
Sou-Sen Leu, You-Che Lin, Tao-An Chen, Yann-Yih Ho, National Taiwan University of Science and Technology, Taiwan
- **A Simulation Based Approach for Designing Optimum Configuration of Complex Processes Influencing Project Level Decisions in Construction Industry**
Hemanta Doloi, The University of Melbourne, Australia

Session A6 OS: Automation and Robotization in Construction Maintenance and Inspection

Chair: T. Kanzaki (Kagawa University)

(13:40 – 15:10)

- **Current Situation and Issues Concerning the Maintenance and Management of Underground Lifeline Structures in Japan - Evolving toward the Introduction of Information Technology, Automation and Robotization -**
Tadashi Kanzaki, Kagawa University, **Shigeru Yamaguchi**, NTT Infrastructure Network Corporation, Japan
- **State of the Art and Future Prospect of Maintenance and Operation of Road Tunnel**
Hideto Mashimo, Toshiaki Ishimura, Public Works Research Institute, Japan
- **Guideline for Maintenance of Railway Concrete Structures**
Seiichi Tottori, Atsushi Ichikawa, Railway Technical Research Institute, Japan
- **Efficiency of Inspection of Sewer-Pipeline Using Mirror Tele-camera System and Sewer-Inspection Support System**
Takayoshi Oosaka, Tokyo Metropolitan Sewerage Service CO., LTD., Takeki Kajiura, Kazunori Watanabe, Shinji Numao, Nippon Koei CO., LTD., Kiichiro Tougou, Toshiba Teli CO., LTD., Japan
- **The Outlook and Challenges of "IT" Applications for Gas Pipelines Maintenance Operations**
Kohei Kawano, Tokyo Gas Engineering co., ltd., Japan

October 4 (Wednesday)

- **SPR Method : Rehabilitation Technologies to Revive Decrepit Pipelines**

Toshiyuki Deguchi, Tokyo Metropolitan Sewerage Service Corporation, Hamao Yamashiro, Adachi Construction and Industry Co. Ltd, **Hiroshi Sugahara**, Sekisui Chemical Co. Ltd, Japan

Session A7 Information Technology in Construction Management (15:30 – 17:00)

Chair: H. Furuya (Obayashi Corporation)

- **Data Exchange Platform for Bridge Disaster Prevention Using Intelligent Agent**

Min-Yuan Cheng, Yu-Wei Wu, National Taiwan University of Science and Technology, Taiwan

- **A Resource-Based Quality Control e-Model for Construction Projects**

Chung-Houng Wu, Shang-Hsien Hsieh, Hui-Ping Tserng, National Taiwan University, Li-Shing Yi, City Great Information Technology, Co., Ltd., Taiwan

- **Bridge Condition Monitoring System Using Wireless Network (CDMA and ZigBee)**

M.J. Chae, H.S. Yoo, J.R. Kim, M.Y. Cho, Korea Institute of Construction Technology, Korea

- **Software Agent for Design-Build Process Cooperation**

Ming-Hsiu Tsai, Min-Yuan Cheng, National Taiwan University of Science & Technology, Taiwan

- **Evaluation of Asphalt Pavement Crack Sealing Performance Using Image Processing Technique**

Hyounghwan Kim, Seung Heon Han, Hana Nam, Yonsei University, Korea, Hamid Soleymani, University of Alberta, Canada

Conference Room No. 1 (3rd floor)

Session B4 OS: Advanced Production Technologies of Industrialized Houses (9:30 – 10:45)

Chair: S. Matsumura (The University of Tokyo)

- **Construction of the Resource Circulation System which Used the Factory as the Core**

Hiroshi Kamikawaji, Sekisui House, LTD, Japan

- **Structuring of Sekisui Heim Automated Parts Pickup System (HAPPS) to Process Individual Floor Plans**

Jun Furuse, Masayuki Katano, Sekisui Chemical Co., Ltd., Japan

- **How Have CAD-CAM Systems Changed Japanese Conventional Wooden Construction in These Three Decades?**

Shuichi Matsumura, The University of Tokyo, Japan

- **The Integrated Project ManuBuild of the EU**

Thomas Bock, Technical University Munich, Germany

- **Action-Based 4+1 System of Life Cycle Housing Management**

Junichi Yagi, Shimizu Corporation, Eiji Arai, Osaka University, Japan

Session B5 OS: Interdisciplinary Study on Construction Management and Engineering

Chair: S. Furusaka (Kyoto University)

(11:05 – 12:20)

- **A Step Forward to Management Driven Construction Quality**

Takashi Saito, Japan Post, Shuzo Furusaka, Kyoto University, Japan

- **Development of a Risk Management System for the Project Life Cycle of Super-Highrise Residence**

Shuzo Furusaka, Makoto Ohsaki, Kazunori Harada, Sohsuke Arai, Motohiko Yokose, Takashi Kaneta, Kyoto University, Hideki Kashii, Katsuki Nakazono, SEIWA REAL ESTATE CO., Ltd., Norikazu Katoh, AQA Co, Ltd, Japan

October 4 (Wednesday)

- **Risk-Sharing Rule in Project Contracts**
Kiyoshi Kobayashi, Toshihiko Omoto, Masamitsu Onishi, Kyoto University, Japan
- **Human-Robot Collaboration: Technical Issues from a Viewpoint of Human-Centered Automation**
Tetsuo Sawaragi, Yukio Horiguchi, Kyoto University, Japan
- **Risk Allocation of Interfaces between Construction and Core System Contracts: A Case Study on Taiwan High Speed Railroad Project**
Tsong-Chieh Tsai, National Yunlin University of Science & Technology, Chia-Cheng Yen, Mitsubishi Heavy Industries, Ltd., Taiwan

Session B6 OS: RT and IT in Construction (1) (13:40 – 15:10)

Chairs: Naruo Kano (Waseda University)

R. Navon (Faculty of Civil & Environmental Engineering, Israel)

- **Keynote: Present Status and Future Prospects of Automated Project Performance Indicators' Measurement**
Ronie Navon, Faculty of Civil & Environmental Engineering, Israel
- **Control System for a Semi-automatic Façade Cleaning Robot**
E. Gambio, M. Hernando, Universidad Politécnica de Madrid, Spain
- **Development of a Real-Time Control System Architecture for Automated Steel Construction**
Kamel S. Saidi, Robert Bunch, Alan M. Lytle, Fredrick Proctor, National Institute of Standards and Technology, USA
- **Spline Based Trajectory Planning for Cooperative Crane Lifts**
S. Vijaya Bhaskar, N. Ramesh Babu, Koshy Varghese, Indian Institute of Technology Madras, India
- **Decision Support System for Land Reclamation Using Prefabricated Vertical Drains**
Suganya. R, Koshy Varghese, Gandhi S.R, Indian Institute of Technology, M.A. Ashok, Larsen & Toubro Ltd., India

Session B7 OS: RT and IT in Construction (2) (15:30 – 17:00)

Chairs: Naruo Kano (Waseda University)

R. Navon (Faculty of Civil & Environmental Engineering, Israel)

- **Construction Management Tools Using 3D-CAD, Virtual Reality, RFID, and Photography Technologies**
Naruo Kano, Waseda University, Japan
- **Cost Management Using 3D Modeling - Design and Production Process in View of the Client Satisfaction -**
Hiromitsu Sone, Makoto Nagao, Hirohiko Fujii, Maeda Corporation, Japan
- **User-Oriented Interactive Building Design**
S. Martinez, A. Salgado, C. Barcena, C. Balaguer, University Carlos III of Madrid, J.M. Navarro, C. Bosch, A. Rubio, Dragados, Spain
- **Summary of NIST's Efforts to Develop Protocols for the Performance Evaluation of 3D Imaging Systems**
Geraldine S. Cheok, Alan M. Lytle, Kamel S. Saidi, National Institute of Standards and Technology, USA
- **Development of a Drawing Based Information Sharing Tool Using Handheld Computer (Application to a Finished Work Inspection and a Building Diagnosis)**
Tomoya Kaneko, Obayashi Corporation, Japan
- **Application of Laser-Based 3D Imaging to Steel Construction**
Alan M. Lytle, Kamel S. Saidi, National Institute of Standards and Technology, USA

October 4 (Wednesday)

Conference Room No. 3 (3rd floor)

Session C4 OS: Autonomous Systems for Construction (9:30 – 10:45)

Chairs: H. Osumi (Chuo University)

S. Sarata (AIST)

- **Development of Autonomous System for Loading Operation by Wheel Loader**
Shigeru Sarata, Noriho Koyachi, AIST, Takashi Tubouchi, University of Tsukuba, Hisashi Osumi, Chuo University, Masamitsu Kurisu, Tokyo Denki University, Kazuhiro Sugawara, Hitachi Construction Machinery Co., Japan
- **Autonomous Scooping of a Rock Pile by a Wheel Loader Using Disturbance Observer**
Osamu Kanai, Hisashi Osumi, Chuo University, Shigeru Sarata, AIST, Masamitsu Kurisu, Tokyo Denki University, Japan
- **Development of Bucket Scooping Mechanism for Analysis of Reaction Force Against Rock Piles**
Yuta Takahashi, Ryohtaroh Yasuhara, Osamu Kanai, Hisashi Osumi, Chuo University, Shigeru Sarata, AIST, Japan
- **Tracing Control for a Tracked Vehicle Based on a Virtual Wheeled Mobile Robot**
Masamitsu Kurisu, Kazutaka Takahashi, Toyohiro Konishi, Tokyo Denki University, Shigeru Sarata, AIST, Japan
- **Massive Rock Handling by a Breaker -Graspless Manipulation and Object Recognition-**
Kumiko Tadano, Takashi Tsubouchi, University of Tsukuba, Masamitsu Kurisu, Tokyo Denki University, Shigeru Sarata, National Institute of Advanced Industrial Science and Technology, Japan

Session C5 Mobile Robot Navigation (11:05 – 12:20)

Chair: M. Kurisu (Tokyo Denki University)

- **Wireless Sensor-driven Intelligent Navigation Robots for Indoor Construction Site Security and Safety**
Yong K. Cho, University of Nebraska-Lincoln, Jong-Hoon Youn, University of Nebraska-Omaha, USA
- **Indoor Navigation and Workpiece Outline Recognition for Autonomous Construction Machinery**
Makoto Oshio, Kenniti Hamamoto, Yuji Hiramatsu, Yoshinori Matsunaga, Kajima Corporation, Japan
- **Reliable Position Estimation Method of the Mobile Robot by Laser Scanner and Indoor GPS System**
Hyeyeon Chang, JongSuk Choi, Munsang Kim, Korea Institute of Science and Technology, Korea
- **Demonstration of Robotic Wheelchair in Fukuoka Island-City**
Yutaro Fukase, Hiroshi Kanamori, Hitoshi Satoh, Tetsuji Yoshida, Keigo Takeuchi, Junichiro Maeda, Shimizu Corporation, Japan

Session C6 Robot Control System (1) (13:40 – 15:10)

Chair: H. Asama (The university of Tokyo)

- **Cylinder Detection and Grasping Application Using Humanoid Robot**
Shingo Maeda, Tomohito Takubo, Kenji Inoue, Tatsuo Arai, Osaka University, Shun Nishide, Kyoto University, Japan
- **Development of a Wearable Robot for Assisting Carpentry Workers**
Junpei Naito, Goro Obinata, Atsushi Nakayama, Kazunori Hase, Nagoya University, Japan

October 4 (Wednesday)

- **A Suggestion on Product Model Driven Construction Robot**
Naohiro Ikeda, Syuji Ageishi, Japan Construction Method and Machinery Research Institute, Hiroshi Yamamoto, Public Works Research Inst., Japan
- **Standard Product Models for Supporting Automated Erection of Structural Steelwork**
Vineet R. Kamat, University of Michigan, Robert R. Lipman, National Institute of Standards and Technology, USA

Session C7 Robot Control System (2) (15:30 – 17:00)

Chair: H. Yoshinada (Komatsu Ltd.)

- **Operating System of a Double-Front Work Machine for Simultaneous Operation**
Akinori Ishii, Hitachi Construction Machinery Co., Ltd., Japan
- **The Analysis of Excavator Operation by Skillful Operator**
Yuki Sakaida, Daisuke Chugo, Hajime Asama, The University of Tokyo, Kuniaki Kawabata, Hayato Kaetsu, RIKEN, Japan
- **Real-Time Network Based Bilateral Robot Control System**
Yutaka Uchimura, Kajima Corporation, Kouhei Ohnishi, Keio University, Japan
- **Adaptive Transparent Force Reflecting Teleoperation with Local Force Compensators**
Yushing Cheung, Jae H. Chung, Stevens Institute of Technology, USA
- **An Open-Loop vs. Closed-Loop Backhoe Excavator Control System**
Eugeniusz Budny, Mirosław Chłosta, Institute for Mechanized Construction and Rock Mining, Poland

Masaru Ibuka Auditorium (1st floor)

Special Lecture (17:20 – 17:40)

Chair: T. Yoshida (Chair of the ISARC 2006 Planning Subcommittee, Shimizu Corporation)

- **Construction Automation and Robotics in the 21st Century**
Yukio Hasegawa, Waseda University, Japan

RIHGA Royal Hotel Tokyo

Award Ceremony & Buffet Party (18:00 – 20:00)

October 5 (Thursday)

Masaru Ibuka Auditorium (1st floor)

Session A8 Sensing and Imaging Technology in Construction Management (9:30 – 10:45)

Chair: M. Okano (Fujita Corporation)

- **Development of a Vehicle-Mounted Road Surface 3D Measurement System**
Kiichiro Ishikawa, **Takashi Onishi**, Yoshiharu Amano, Takumi Hashizume, Waseda University, Jun-ichi Takiguchi, Mitsubishi Electric Corporation, Takashi Fujishima, Japan Construction Method and Machinery Research Institute, Yoichi Tanaka, National Institute for Land and Infrastructure Management, Japan
- **Research on the Extendable Data Exchange Standard in Information Integrated Construction of Filling Work**
Yoshitaka Minami, Hiroshi Yamamoto, Atsuro Oyama, Public Works Research Institute, Toshiyuki Kamei, Honshu-Shikoku Bridge Expressway Company Limited, Japan
- **Construction Management Using Position Measuring Technology of Construction Equipment in Paving Work**
Tamotsu Ogasawara, **Tetsuya Kanazawa**, Koichi Kobayashi, Ministry of Land, Infrastructure and Transport, Takashi Fujishima, Japan Construction Mechanization Association, Japan
- **Interaction of Virtual and Physical Space in Contemporary Life of Iranian Traditional Cities**
Mir Saeed Moosavi, Islamic Azad University of Tabriz, Iran
- **Productivity Assessment of Rock Transportation Trucks Using Simulation Technology**
Julian H. Kang, Texas A&M University, USA, Sung-Mo Ahn, Ji-Hyun Nam, Samsung Engineering and Construction, Korea

Session A9 Automation and Robotization in Civil Engineering (1) (11:05 – 12:20)

Chair: Y. Tazawa (Ishikawajima-Harima Heavy Industries Co., Ltd.)

- **Bridge Maintenance Robotic Arm: Capacitive Sensor for Obstacle Ranging in Particle Laden Air**
Nathan Kirchner, Dikai Liu, Gamini Dissanayake, University of Technology, Sydney, Australia
- **Motion Analysis of Hydraulic Excavator in Excavating and Loading Work for Autonomous Control**
Takashi Yamaguchi, Hiroshi Yamamoto, Public Works Research Institute, Japan
- **Development of a System for Measuring Volume of Earth Transported on a Barge Using Digital Cameras**
Masaharu Masutani, Hideki Sugimoto, PENTA-OCEAN CONSTRUCTION CO.,Ltd, Japan
- **Wireless Vibration Sensor for Tunnel Construction**
Soon-Wook Kwon, SungKyunKwan University, Jung-Yeol Kim, Hyun-Seok Yoo, Moon-Young Cho, Korea Institute of Construction Technology, Korea
- **Applications of Computer Aided Design to Evaluate the Zoning of Hazard Prevention in Community Neighbors**
Kuo-Chung Wen, Chih-Fan Hsu, Chinese Culture University, Taiwan

Session A10 Automation and Robotization in Civil Engineering (2) (13:40 – 15:10)

Chair: S. Sako (Fujita Corporation)

- **Discussion of Influence on Pile Quality by Removing Pile Foundation Casing with Vibrator**
Yan-Chyuan Shiau, Shiau-Mei Wang, Jung-Yi Tsai, Chung-Hwa University, Shu-Jen Sung, Kang & Associates, Chung-Piao Chiang, Da-Fong Engineering Consultant Company, Taiwan

October 5 (Thursday)

- **Identification of Elastic Constants of the Reinforced Orthotropic Composite Ground from Field Measurements**
Hyu-Soung Shin, Korea Institute of Construction Technology, Korea, Gyan N. Pande, Centre for Civil and Computational Engineering, UK
- **Adaptive Sliding Mode Control for Civil Structures Using Magnetorheological Dampers**
T.H. Nguyen, N.M. Kwok, Q.P. Ha, J. Li, B. Samali, University of Technology, Sydney, Australia
- **Examination of Practical Utility of Remotely Controlled Robots in Disasters**
Naoki Kimura, Sunao Inoue, Ministry of Land, Infrastructure and Transport, Akira Fujioka, Katsuhiko Kawakami, Fujita Corporation, Japan
- **An Innovative Ooze Dredging for Environmental Preservation**
Youichi Kogure, Yuuji Hodohara, Ministry of Land, Infrastructure and Transport, Shuuhou Yano, Mitsubishi Heavy Industries Ltd, Kaoru Kamachi, MEC Engineering Service Co. Ltd, Japan
- **Development of Sand Bypass System Using a Self-Sinking Suction Pipe with Holes for Automation and Labor Saving**
Hitoshi Noguchi, Yuji Fujita, Port and Airport Research Institute, Japan

Session A11 Automation and Robotization in Civil Engineering (3) (15:30 – 17:00)

Chair: A. Harada (Obayashi Corporation)

- **Prototyping and Automating a Concrete Surface Grinding Machine for Improving Infrastructure Conditions**
Jongwon Seo, Wonsik Lee, Hanyang University, Sungwoo Moon, Pusan University, Sangju Kim, Core System, Jongkwon Lim, Management Co., Korea
- **Technical Aspects Concerning a Robot Used for Checking the Sewer Pipes**
Daniel Popescu, Dan Sever Ionescu, Technical University of Civil Engineering Bucharest, Adrian Bruja, Research Institute for Equipment and Technologies in Civil Engineering Bucharest, Romania
- **Research on Emergent Soil Exploration System Using Remotely Operated Robot**
Mikio Okano, Kazuhiro Chayama, Fujita Corporation, Hiroshi Mayuzumi, Takuo Muroyama, Kawasaki Geological Engineering Co. Ltd, Katsuyuki Baba, Shiro Fujita, TMSUK Co. Ltd, Japan
- **Precise Road Line Localization Using Single Camera and 3D Road Model**
Kiichiro Ishikawa, Takashi Onishi, Yoshiharu Amano, Takumi Hashizume, Waseda University, Jun-ichi Takiguchi, Shogo Yoneyama, Mitsubishi Electric Corporation, Japan
- **Omni-Directional Robot for Pavement Sign Painting Operations**
Woo-Chang Lee, Dongnam Kim, Graduate School Korea University, Daehie Hong, Woo Chun Choi, Korea University, Tae-Hyung Kim, KICT, Sang Hoon Lee, Doowon Tech. College, Korea

Conference Room No. 1 (3rd floor)

Session B8 Logistics and Robot Control Technology (9:30 – 10:45)

Chair: J. Maeda (Shimizu Corporation)

- **The Research of Construction Common Product Coding System**
Nai-Hsin Pan, National Yunlin University of Science and Technology, Taiwan
- **Information Exchange of Curtain Wall Work for the Application of Supply Chain Management System**
Doo Won Hwang, Sung Wook Choi, Young Woong Song, Yoon Ki Choi, Soongsil University, Korea

October 5 (Thursday)

- **First Numerical and Experimental Results on Active Controlled Glazed Facades**
B. Naticchia, A. Carbonari, Polytechnic University of Marche, Italy
- **Development of Adaptive Structure by Variable Geometry Truss (Application of Movable Monument in Expo 2005)**
Fumihiko Inoue, Kohei Kurita, Ryuichi Moroto, Noriyuki Furuya, Obayashi Corporation, Japan
- **Automation System for Curtain Wall Installation (ASCI)**
Jong Ho Choi, Seung Yeol Lee, Chang Soo Han, Hanyang University, Kye Young Lee, Sang Heon Lee, SAMSUNG Co. E&C Group, Korea

Session B9 Building Construction Application System (11:05 – 12:20)

Chair: M. Mori (Taisei Corporation)

- **Web-Based Graphic Service Request System for Operation and Maintenance for Residential Complex**
Kwang Jun Lee, Jin Su Jeong, Texas A&M University, USA
- **Application of the Automated Building Construction System Using the Conventional Construction Method Together**
Yuichi Ikeda, Tsunenori Harada, Obayashi Corporation, Japan
- **Assembling Wall Panels with Robotic Technologies**
Frans van Gassel, Pascal Schrijver, Jos Lichtenberg, Technische Universiteit Eindhoven, The Netherlands
- **Development of RFID-Based Flow Examination System**
Tetsu Kondo, Shigeru Uchida, Tomoya Kaneko, Koji Hamada, Shinichi Miyaoura, OBAYASHI Corporation, Masahiro Okura, OAKSETSUBI Corporation, Japan

Session B10 Knowledge Engineering and Management Technology (13:40 – 15:10)

Chair: H. Hoshino (Takenaka Corporation)

- **Using MD CAD Objects to Automatically Generate a Contract-Driven Schedule**
Chung-Wei Feng, Yi-Jao Chen, National Cheng Kung University, Taiwan
- **Applying Knowledge Map for Junior Construction Engineer**
Meng Hsueh Lee, H. Ping Tserng, National Taiwan University, Taiwan
- **Knowledge Sharing Model and Its Implication on Knowledge Categorization and Management**
S. Ping Ho, Pei-Chi Wu, Yaowen Hsu, National Taiwan University, Taiwan
- **Designing Virtual Construction Worksite Layout in Real Environment via Augmented Reality**
Xiangyu Wang, University of Sydney, Australia, Henyi Jen, Yuan Ze University, Taiwan
- **An Ontology-Based Knowledge Management Framework for Performance Improvement of Construction Project Managers**
V. Paul Christopher Charlesraj, Satyanarayana N. Kalidindi, Indian Institute of Technology Madras, India
- **Critical Success Factors for Knowledge Management Studies in Construction**
Yu-Cheng Lin, Lee-Kuo Lin, National Taipei University of Technology, Taiwan

Session B11 IT Usage Management System (15:30 – 17:00)

Chair: F. Inoue (Obayashi Corporation)

- **Workflows in Constructions Modelled with Stochastic Artificial Social Systems**
Calin Ciufudean, Constantin Filote, Stefan cel Mare University of Suceava, Daniel Popescu, Technical University of Constructions, Romania

October 5 (Thursday)

- **An Application Model of RFID Technology on Progress Measurement and Management of Construction Works**
Su-Won Yoon, Sangyoon Chin, Yea-Sang Kim, Soon-Wook Kwon, Sungkyunkwan University, Korea
- **Design of a Schema-Driven Environment for Facilitating Application of Construction Information Standards**
Hsien-Tang Lin, Shang-Hsien Hsieh, National Taiwan University, Taiwan
- **The Verification on the Effect of Automated Life Cycle Management System for Curtain Wall**
Chul-Woo Lim, Jung-Ho Yu, Chang-Duk Kim, Kwangwoon University, Korea
- **Developing Advanced Experience Management System in Construction Projects Using Experience Maps**
C.S. Chen, Ching Yun University, Yu-Cheng Lin, National Taipei University of Technology, Y.K. Tsui, S.H. Hung, National Chiao Tung University, Taiwan
- **Development of Visualization System of Construction Process**
Yoichi Yuasa, Takenaka Corporation, Japan

Conference Room No. 3 (3rd floor)

Session C8 Plant and Dismantling (9:30 – 10:45)

Chair: K. Fujishima (Hitachi Construction Machinery Co., Ltd.)

- **Cement Production at Deva Cement Factory from Romania**
Susana Arad, Victor Arad, Petrosani University, Bogdan Bobora, Carpatcement Holding S.A., Romania
- **Automation of Incineration Plant Demolition and Utilization of Information Technology**
Takuya Gokyyu, Mitsuo Nihara, Toshiji Kanai, Shouji Gotou, Youichi Aoki, Kazunori Shibano, Tokyu Construction Co.,Ltd., Japan
- **Development of Automatic Chimney Cleaning and Brick Dismantling Equipment**
Keishi Nishiyama, Keiji Kobayashi, TODA CORPORATION, Japan
- **Operability Assessment of Indoor Dismantlement Assistance Machine**
Yasuhiro Shimoi, Keisuke Kanemaru, Toshio Morita, Keio University, Kazuo Fujishima, Kunitsugu Tomita, Ayato Iwasaki, Hitachi Construction Machinery Co.,Ltd, Japan
- **Filter Leak Tester for Semiconductor/LCD Clean Rooms**
Shintaro Sakamoto, Kouetsu Tanaka, Shinryo Corporation, Japan

Session C9 Autonomous Robotic System (11:05 – 12:20)

Chair: J. Mitsunaga (Tokyu Construction Co., Ltd.)

- **A Truly Autonomous Robotic System through Self-Maintained Energy**
Trung Dung Ngo, Henrik Schiøler, Aalborg University, Denmark
- **Particle Swarm Optimization-Based Coordination of a Group of Construction Vehicles**
N.M. Kwok, Q.P. Ha, V.T. Ngo, S.M. Hong, University of Technology, Sydney, Australia
- **Control Architecture Characteristics for Intelligence in Autonomous Mobile Construction Robots**
Rahee Agate, Derek W. Seward, Mohamed J. Bakari, Lancaster University, UK, C. Pace, University of Malta, Malta
- **Modular Structure Assembly Using Blackboard Path Planning System**
Yuzuru Terada, Satoshi Murata, Tokyo Institute of Technology, Japan

October 5 (Thursday)

Session C10 Construction Planning and Management Methods (13:40 – 15:10)

Chair: N. Miura (Kokushikan University)

- **Construction Project Buffer Management in Scheduling Planning and Control**
Shu-Hui Jan, S. Ping Ho, National Taiwan University, Taiwan
- **Optimization Model of External Resource Allocation for Resource-Constrained Project Scheduling Problems**
Kuo-Chuan Shih, Shu-Shun Liu, National Yunlin University of Science and Technology, Taiwan
- **Assignment Buffer Control for Construction Projects**
Jeongki Kim, Hyunsoo Lee, Moonseo Park, Hanguk Ryu, Seoul National University, Korea
- **Pre-Project Planning and Its Practice in Industry**
Yu-Ren Wang, Chaoyang University of Technology, Taiwan, G. Edward Gibson, Jr., University of Alabama, USA
- **Construction Planning Assist Method Used Construction Model**
Yoshihisa Masamura, Kajima Corporation, Japan
- **Multiobjective PSO Algorithm in Project Staff Management**
I-Tung Yang, Tamkang University, Taiwan