

MIAR 2008 Program
Tokyo Japan, August 1-2, 2008

Friday, August 1st

Opening remarks
 (8:45-9:00)

Invited session Chairs: Makoto Hashizume, Horace Ip

Invited Lecture 1 (9:00-9:45) **Terry Peters**, *Robarts Research Institute, University of Western Ontario, Canada*
 Towards a Medical Virtual Reality Environment for Minimally Invasive Cardiac Surgery

Oral session 1 (9:45-11:00) **Surgical Planning and Simulation**
 Chairs: Makoto Hashizume, Horace Ip

1.1 9:45-10:00 An Integration of Statistical Deformable Model and Finite Element Method for Bone-related Soft Tissue Prediction in Orthognathic Surgery Planning
Qizhen He, Jun Feng, Horace H. S. Ip, James Xia, Xianbin Cao

1.2 10:00-10:15 Automated Preoperative Planning of Femoral Component for Total Hip Arthroplasty (THA) from 3D CT Images
Itaru Otomaru, Masahiko Nakamoto, Masaki Takao, Nobuhiko Sugano, Yoshiyuki Kagiya, Hideki Yoshikawa, Yukio Tada, Yoshinobu Sato

1.3 10:15-10:30 Validation of Viscoelastic and Nonlinear Liver Model for Needle Insertion from In Vivo Experiments
Yo Kobayashi, Akinori Onishi, Takeharu Hoshi, Kazuya Kawamura, Makoto Hashizume, Masakatsu G. Fujie

1.4 10:30-10:45 Simulation of Active Cardiac Electromechanical Dynamics
Ken C.L. Wong, Linwei Wang, Heye Zhang, Huaifeng Liu, Pengcheng Shi

1.5 10:45-11:00 Wheelchair Propulsion Analysis System that Incorporates Human Skeletal Muscular Model ~Analyses on the Flat Floor and Slope~
Akihiko Hanafusa, Motoki Sugawara, Teruhiko Fuwa, Tomozumi Ikeda, Naoki Suzuki, Asaki Hattori

Poster session 1 (11:15-11:40) **Poster teaser**
 Chair: Yasushi Yamauchi

Medical Image Computing

P1.1 Automatic Detection of Fiducial Marker Center Based on Shape Index and Curvedness
Manning Wang, Zhijian Song

P1.2 Modality-independent Determination of Vertebral Position and Rotation in 3D
Tomaž Vrtovec

P1.3 Coupled Meshfree-BEM Platform for Electrocardiographic Simulation: Modeling and Validations
Linwei Wang, Heye Zhang, Ken C.L. Wong, Pengcheng Shi

P1.4 Source Localization of Subtopographies Decomposed by Radial Basis Functions
Adil Deniz Duru, Ahmet Ademoglu

P1.5 Estimation of the Current Density in a Dynamic Heart Model and Visualization of Its Propagation
Liansheng Wang, Pheng Ann Heng, Wong Tien Tsi

Image Analysis

P1.6	Identification of Atrophy Patterns in Alzheimer's Disease based on SVM Feature Selection and Anatomical Parcellation <i>Lilia Mesrob, Benoit Magnin, Olivier Colliot, Marie Sarazin, Valérie Hahn-Barma, Bruno Dubois, Patrick Gallinari, Stéphane Lehericy, Serge Kinkingnéhun, Habib Benali</i>
P1.7	A Surface-based Fractal Information Dimension Method for Cortical Complexity Analysis <i>Yuanchao Zhang, Jiefeng Jiang, Lei Lin, Feng Shi, Yuan Zhou, Chunshui Yu, Kuncheng Li, Tianzi Jiang</i>
P1.8	Wavelet-based Compression and Segmentation of Hyperspectral Images in Surgery <i>Hamed Akbari, Yukio Kosugi, Kazuyuki Kojima, Naofumi Tanaka</i>
P1.9	A Novel Level Set Based Shape Prior Method for Liver Segmentation from MRI Images <i>Kan Cheng, Lixu Gu, Jianghua Wu, Wei Li, Jianrong Xu</i>
Special Poster Session	
P1.10	A Fast Euclidean Distance Transformation Developed for the Digital Snake Techniques <i>Ben- Shung Chow</i>
P1.11	Clusterization of deformation modes for quantitative evaluation on factor analysis techniques on statistical shape modeling <i>Mauricio Reyes, Marius George Linguraru, Lutz-Peter Nolte, Miguel Angel Gonzalez Ballester</i>
P1.12	Cognitive Methods in Medical Image Analysis and Interpretation <i>Lidia Ogiela, Ryszard Tadeusiewicz, Marek Ogiela</i>
P1.13	HipMatch Validation: Postoperative Estimation of Acetabular Cup Orientation using 3D-2D Registrations <i>Guoyan Zheng</i>
P1.14	Patient Specific Biomechanical Modeling of Hepatic Vasculature for Augmented Reality Surgery <i>Phu Binh Nguyen, Tao Yang, Florence Leong, Stephen Chang, Sim Heng Ong, Chee Kong Chui</i>
P1.15	Artifact-free finite elements model of the total hip replacement femur from post-operative CT images <i>Yeon Soo Lee, Vladimir I. Shin, Georgy Shevlyakov</i>

(11:40-12:30) Poster Presentations

Invited session Chairs: Stephen Riederer, Yoshinobu Sato

Invited Lecture 2 (13:30-14:15) **Stephen Wong**, *Methodist Hospital - Weill Cornell Medical College, USA*
Molecular image-guided theranostics

Oral session 2 (14:15-15:30) **Shape Modeling and Morphometry**
Chairs: Stephen Riederer, Yoshinobu Sato

2.1	14:15-14:30	Statistical Shape Space Analysis Based on Level Sets <i>Nina Kozic, Miguel Á. González Ballester, Moritz Tannast, Lutz P. Nolte, Mauricio Reyes</i>
2.2	14:30-14:45	Statistical Piecewise Assembled Model (SPAM) for the Representation of Highly Deformable Medical Organs <i>Jun Feng, Peng Du, Horace H. S. Ip</i>
2.3	14:45-15:00	Amygdala Surface Modeling with Weighted Spherical Harmonics <i>Moo K. Chung, Brendon M. Nacewicz, Shubing Wang, Kim M. Dalton, Seth Pollak, Richard J. Davidson</i>

2.4 15:00-15:15	Kalman Filtering for Frame-by-frame CT to Ultrasound Rigid Registration <i>Haydar Talib, Matthias Peterhans, Jaime García, Martin Styner, Miguel A. González Ballester</i>
2.5 15:15-15:30	Cardiac PET Motion Correction using Materially Constrained Transform Models <i>Adrian J. Chung, Paolo G. Camici, Guang-Zhong Yang</i>

Invited session Chairs: Masakatsu G. Fujie, Guang-zhong Yang

Invited Lecture 3 (16:00-16:45) **Koji Ikuta**, Nagoya University, Japan
Micro/nano Robots for Future Biomedicine

Oral session 3 (16:45-17:45) **Image-Guided Robotics**
Chairs: Masakatsu G. Fujie, Guang-zhong Yang

3.1 16:45-17:00	Image Guidance for Robotic Minimally Invasive Coronary Artery Bypass <i>Michael Figl, Daniel Rueckert, David Hawkes, Roberto Casula, Mingxing Hu, Ose Pedro, Dong Ping Zhang, Graeme Penney, Fernando Bello, Philip Edwards</i>
3.2 17:00-17:15	MRI-compatible Rigid and Flexible Outer Sheath Device with Pneumatic Locking Mechanism for Minimally Invasive Surgery <i>Siyang Zuo, Noriaki Yamanaka, Ikuma Sato, Ken Masamune, Hongen Liao, Kiyoshi Matsumiya, Takeyoshi Dohi</i>
3.3 17:15-17:30	MR Compatible Tactile Sensing and Noise Analysis in a 1.5 Tesla MR System <i>Abbi Hamed, Zion Tsz Ho Tse, Ian Young, Michael Lamperth</i>
3.4 17:30-17:45	A Framework of the Non-invasive Ultrasound Theragnostic System <i>Norihiro Koizumi, Deukhee Lee, Kohei Ota, Shin Yoshizawa, Kiyoshi Yoshinaka, Yoichiro Matsumoto, Mamoru Mitsuishi</i>

Saturday, August 2nd

Invited session Chairs: Nassir Navab, Kensaku Mori

Invited Lecture 4 (9:00-9:45) **Guang-Zhong Yang**, Imperial College, London, UK
Perceptual Docking for Robotic Control

Oral session 4 (9:45-11:00) **Image-Guided Intervention**
Chairs: Nassir Navab, Kensaku Mori

4.1 9:45-10:00	In Vivo Evaluation of a Guidance System for Computer Assisted Robotized Needle Insertion Devoted to Small Animals <i>Stephane A. Nicolau, Luis Mendoza-Burgos, Luc Soler, Didier Mutter, Jacques Marescaux</i>
4.2 10:00-10:15	Composite-type Optical Fiberscope for Laser Surgery for Twin-to-twin Transfusion Syndrom <i>Kiyoshi Oka, Akihiro Naganawa, Hiromasa Yamashita, Tetsuya Nakamura, Toshio Chiba</i>
4.3 10:15-10:30	Operation of Manipulator with Balloon for Stabilizing Fetus in Utero under Ultrasound Guidance <i>Noriaki Yamanaka, Hiromasa Yamashita, Kiyoshi Matsumiya, Hongen Liao, Ken Masamune, Toshio Chiba, Takeyoshi Dohi</i>
4.4 10:30-10:45	Investigation of Partial Directed Coherence for Hand-eye Coordination in Laparoscopic Training <i>Julian J.H. Leong, Louis Atallah, George P. Mylonas, Daniel R. Leff, Roger J. Emery, Ara W. Darzi, Guang-Zhong Yang</i>
4.5 10:45-11:00	A Virtual Reality Patient and Environments for Image Guided Diagnosis <i>Barnabas Takacs, David Hanak, Kirby G. Voshburg</i>

Poster session 2 (11:15-11:40)	Poster teaser Chair: Ken Masamune
	Interventional Imaging
P2.1	A Navigation System for Brain Surgery using Computer Vision Technology <i>Jiann-Der Lee, Chung-Wei Lin, Chung-Hsien Huang, Shin-Tseng Lee, Chien-Tsai Wu</i>
P2.2	Computer-aided Delivery of High-Intensity Focused Ultrasound (HIFU) for Creation of an Atrial Septal Defect In Vivo <i>Hiromasa Yamashita, Tetsuko Ishii, Akihiko Ishiyama, Noriyoshi Nakayama, Toshinobu Miyoshi, Yoshitaka Miyamoto, Gontaro Kitazumi, Yasumasa Katsuike, Makoto Okazaki, Takashi Azuma, Masayuki Fujisaki, Shinichi Takamoto, Toshio Chiba</i>
P2.3	Basic Study on Real-time Simulation using Mass Spring System for Robotic Surgery <i>Kazuya Kawamura, Yo Kobayashi, Masakatsu G. Fujie</i>
P2.4	A Precise Robotic Ablation and Division Mechanism for Liver Resection <i>Florence Leong, Liangjing Yang, Stephen Chang, Aun Neow Poo, Ichiro Sakuma, Chee-Kong Chui</i>
	Image Registration
P2.5	Fast Image Mapping of Endoscopic Image Mosaics with Three-dimensional Ultrasound Image for Intrauterine Treatment of Twin-to-twin Transfusion Syndrome <i>Hongen Liao, Masayoshi Tsuzuki, Etsuko Kobayashi, Takeyoshi Dohi, Toshio Chiba, Takashi Mochizuki, Ichiro Sakuma</i>
P2.6	Non-rigid 2D-3D Registration based on Support Vector Regression Estimated Similarity Metric <i>Wenyuan Qi, Lixu Gu, Jianrong Xu</i>
P2.7	Real-time Autostereoscopic Visualization of Registration-generated 4D MR Images of Beating Heart <i>Nicholas Herlambang, Hongen Liao, Kiyoshi Matsumiya, Ken Masamune, Takeyoshi Dohi</i>
	Special Poster Session
P2.8	The Application of Imaging Processing Technologies in Evaluation of Stroke Recovery Stages <i>Tzyh-Chyang Chang, Jiann-Der Lee, Yu-Ying Cheng, Ching Yi Wu</i>
P2.9	Endoliminal Fundoplication using EsophyXTM System:A Newly Developed Minimally Invasive Technique for GERD <i>Satoshi Ieiri, Kazuo Tanoue, Daisuke Yoshida, Hideo Uehara, Takanori Nakatsuji, Kouzou Konishi, Naotaka Hashimoto, Kennoki Ohuchida, Takashi Maeda, Makoto Hashizume</i>
P2.10	Usability enhanced registration method for Knee-joint Surgery's navigation system using 3D auto-stereoscopic Integral Videography <i>Huy Hoang Tran, Hongen Liao, Kiyoshi Matsumiya, Ken Masamune, Takeyoshi Dohi</i>
P2.11	Open MRI guided surgical navigation system for percutaneous needle insertion therapy <i>Jaesung Hong, Takashi Maeda, Yo-ichi Yamashita, Hideaki Nakashima, Kazuhiro Kotoh, Munechika Enjoji, Takefumi Yasunaga, Akinobu Taketomi, Satoshi Ieiri, Kozo Konishi, Kazuo Tanoue, Yoshihiko Maehara, Makoto Hashizume</i>
P2.12	3D Human Brain Modeling for Constructing Japanese Brain Database <i>Ken'ichi Morooka, Takaichi Fukuda, Yasushi Miyagi, Takehito Hayami, Tsuyoshi Okamoto, Xian Chen</i>

P2.13	An Automatic System for 3D Kinematic Analysis of Artificial Knee Implants Using X-ray Fluoroscopic Images <i>Takaharu Yamazaki, Masao Ogasawara, Tetsu Watanabe, Yoshinobu Sato, Tetsuya Tomita, Kazuomi Sugamoto, Hideki Yoshikawa, Shinichi Tamura</i>
P2.14	View following image registration between preoperative MRI data and wedge prism 3D endoscopic images with the rotation of wedge prisms <i>Yuhei Takata, Takeshi Torigoe, Hongen Liao, Etsuko Kobayashi, Ichiro Sakuma</i>
P2.15	Adding Haptic in MR guided interventions for Soft Tissue Palpitation and Stiffness Measurements <i>Zion Tsz Ho Tse, Haytham Elhawary, Marc Rea, Abbi Hamed, Michael Lameperth</i>

(11:40-12:30) Poster Presentations

Invited session	Chairs: Terry Peters, Lixu Gu
Invited Lecture 5 (13:30-14:15)	Nassir Navab , <i>Technische Universität München(TUM), Germany</i> Action and Workflow Driven Augmented Reality for Computer Aided Medical Procedures.

Oral session 5 (14:15-15:15) Augmented Reality
Chairs: Terry Peters, Lixu Gu

5.1 14:15-14:30	Realtime Organ Tracking for Endoscopic Augmented Reality Visualization using Miniature Wireless Magnetic Tracker <i>Masahiko Nakamoto, Osamu Ukimura, Inderbih S. Gill, Arul Mahadevan, Tsuneharu Miki, Makoto Hashizume, Yoshinobu Sato</i>
5.2 14:30-14:45	Fusion of Laser Guidance and 3-D Autostereoscopic Image Overlay for Precision-guided Surgery <i>Hongen Liao, Hirotaka Ishihara, Huy Hoang Tran, Ken Masamune, Ichiro Sakuma, Takeyoshi Dohi</i>
5.3 14:45-15:00	Augmented Display of Anatomical Names of Bronchial Branches for Bronchoscopy Assistance <i>Shunsuke Ota, Daisuke Deguchi, Takayuki Kitasaka, Kensaku Mori, Yasuhito Suenaga, Yoshinori Hasegawa, Kazuyoshi Imaizumi, Hirotsugu Takabatake, Masaki Mori, Hiroshi Natori</i>
5.4 15:00-15:15	Non-metal Slice Image Overlay Display System Used Inside the Open Type MRI <i>Ken Masamune, Ikuma Sato, Hongen Liao, Takeyoshi Dohi</i>

Invited session	Chairs: Stephen TC Wong, Dinggang Shen
Invited Lecture 6 (15:45-16:30)	Makoto Hashizume , <i>Kyushu University, Japan</i> <i>Image-guided Computer-Aided Surgery</i>

Oral session 6 (16:30-17:45) Image Segmentation
Chairs: Stephen TC Wong, Dinggang Shen

6.1 16:30-16:45	Extracting Curve Skeletons from Gray Value Images for Virtual Endoscopy <i>Christian Bauer, Horst Bischof</i>
6.2 16:45-17:00	Automatic Hepatic Vessel Segmentation using Graphics Hardware <i>Marius Erdt, Matthias Raspe, Michael Suehling</i>
6.3 17:00-17:15	Learning Longitudinal Deformations for Adaptive Segmentation of Lung Fields from Serial Chest Radiographs <i>Yonghong Shi, Dinggang Shen</i>

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| 6.4 | 17:15-17:30 | Automatic Extraction of Proximal Femur Contours from Calibrated X-Ray Images Using 3D Statistical Models
<i>Xiao Dong, Guoyan Zheng</i> |
| 6.5 | 17:30-17:45 | Anisotropic Haralick Edge Detection Scheme with Application to Vessel Segmentation
<i>Ali Gooya, Takeyoshi Dohi, Ichiro Sakuma, Hongen Liao</i> |

Closing remarks (17:45~)	
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