CARS 2026 Scientific Program

CARS 2026 Computer Assisted Radiology and Surgery

40th International Congress and Exhibition

July 2 - 5, 2026

Furo-cho, Chikusa-ku, Nagoya, 464-8601, Japan

https://www.cars-int.org

This is a preliminary program. This program will be updated.

May 29th, 2026 version

40th CARS - Computer Assisted Radiology and Surgery

Chairs: Kensaku Mori, PhD (JP), Heinz U. Lemke, PhD (DE)

Thursday, July 2, 2026 Toyoda Auditorium

8:30 Welcome to CARS 2026

CARS 2026 President: Kensaku Mori, PhD, Nagoya University, Nagoya (JP)
CARS Organizer: Heinz U. Lemke, PhD, International Foundation for CARS, Küssaberg (DE)

Thursday, July 2, 2026 Symposion

08:45-10:30 27th IFCARS / SPIE / ISCAS Joint Workshop on the Digital Operating Room (DOR) 1

Chairs: Kevin Cleary, PhD (US), Tomoko Yamaguchi (JP)

Exploring Performance and Trust in Autonomous Surgical Robotic Systems: The Role of Visuo-Haptic Guidance
F. Papenmeier, K. Hagmann, L. Blossey, A. S. Bauer, A. Potinteu, A. Kirst, D. Leidner, M. Huff, J. Klodmann, German Aerospace Center, Wessling; Leibniz-Institut für Wissensmedien; University of Tübingen (DE) [LE-26-00087]

Enhancing Trust in Healthcare Robotics: Implications Derived from Medical Professionals' Perspectives
N. Müller, E. Islertas, D. D. Ebert, A. Schmidt, D. Wilhelm, Nara Institute of Science and Technology, Ikoma (JP); Klinikum rechts der Isar der TUM; Technical University Munich; Ludwig-Maximilians-Universität (DE) [LE-26-00056]

Noise Levels in tele-operated robotic assisted Surgery - a Phase based Analysis
J. Fuchtmann, A. Jell, M. Berlet, H. Friess, D. Wilhelm, L. Wegener, Klinikum rechts der Isar der TUM; Technical University Munich (DE) [LE-26-00083]

Robotic end effector for decompression of tension pneumothorax
C. Müller, R. Roth, L. Wagner, C. Parhofer, P. Biberthaler, Technical University Munich; Klinikum rechts der Isar der TUM, Munich (DE) [LE-26-00015]

Integration of Surgical Robotic Devices in an open OR networking environment – state of the art, integration concept and future challenges
D. Weber, L. Bernhard, L. Wegener, J. Fuchtmann, S. Franke, D. Wilhelm, C. Höfert, O. Burgert, Hochschule Reutlingen; Klinikum rechts der Isar der TUM, Munich; University of Leipzig (DE) [LE-26-00106]

User-centered Design of Graphical User Interfaces for Telemedical Robotic Systems: Development and Usability Study
S. Kolb, M. Kautt, L. Wagner, S. Saurbier, S. Matthiesen, D. Wilhelm, C. Müller, Klinikum rechts der Isar der TUM; Technical University Munich; Karlsruhe Institute of Technology (DE) [LE-26-00058]

Unwritten Rules of Healthcare Assistance for Robotic Systems: Multi-method Workflow Analysis of Postoperative Wound Care Treatments for the Development of Robotic Assistive Systems
F. Jurosch, S. Stabenow, A. Jell, C. Piazza, K. Bengler, D. Wilhelm, Klinikum rechts der Isar der TUM; Technical University Munich (DE) [LE-26-00054]

11:00-12:45 27th IFCARS / SPIE / ISCAS Joint Workshop on the Digital Operating Room (DOR) 2

Chairs: Maximilian W. Berlet, MD (DE), Kitaro Yoshimitsu (JP)

Re-Imagining the Future of Surgery: Lessons Learned from the 36th Annual International Society for Medical Innovation and Technology Conference
K. Cleary, Children's National Hospital, The Sheikh Zayed Institute for Pediatric Surgical Innovation, Washington, DC (US) [LE-63]

Designing the "robot ready" intelligent OR suite of the future: Improving efficiency and safety using advanced simulation tools
L. Bernhard, C. Yang, N. Badihi, D. Wilhelm, C. Amato, Klinikum rechts der Isar der Technischen Universität München (DE); Cannon Design, Los Angeles (US) [LE-121]

Towards Smart Sterile Supply Cycles
H. U. Nguyen, L. K. Stoll, K. Radermacher, J. Heibeyn, RWTH Aachen University (DE) [LE-26-00023]

Towards ubiquitous surgical assistance services via private 5G infrastructure
P. Schollmaier, B. Hohlmann, N. Wickel, H. U. Nguyen, O. Yilmaz, A. Kovler, P. Feodorovici, R. Wellens, K. Radermacher, A. Janß, RWTH Aachen University; Ericsson GmbH; SurgiTAIX AG, Herzogenrath; University Hospital Bonn (DE) [LE-26-00034]

Unlocking the Potential of Object-oriented Hospital Information Systems to Foster Process Mining, Artificial Intelligence, and Clinical Practice in Surgery Preparation: Insights from an Object-centric Study
S. Rashid, K. Sliepkova, L. Bernhard, S. Stabenow, E. Spicker, S. Rinderle-Ma, J. Fottner, D. Wilhelm, M. Berlet, Klinikum rechts der Isar der TUM; Technical University Munich (DE) [LE-26-00099]

OpenThread as a tool for localization of devices and patients in healthcare systems
M. Voß, V. Cobus, F. Wallhoff, A. Schneider, Jade University of Applied Sciences, Wilhelmshaven (DE) [LE-26-00108]

13:45-15:15 CARS Model Guided Medicine and AI

Chairs: Mario A. Cypko, PhD (DE), Naoki Tomii (JP)

PRIMED-AI: A trans-NIH initiative for integrating imaging and multimodal data for clinical decision support
Invited Speaker: Krishna Kandarpa, MD, PhD, National Institutes of Health, Bethesda, MD (US) [IS-155]

KI-COMPASS: causality-aware digital patient models with an example in cardio-oncology
M. A. Cypko, A. Kumar, M. Quante, I. Bojti, J. Wehrle, A. Hornecker, O. Amft, Hahn-Schickard Gesellschaft für angewandte Forschung e. V.; University Medical Center; University of Freiburg (DE) [LE-126]

Technology-Assisted Visceral Surgery: A Model-Based Approach for quantifying Translation and Accessibility across Populations and Geographies
S. Schmailzl, J. Fuchtmann, A. Jell, S. Schorn, L. Bernhard, L. Wagner, L. Wegener, H. Friess, D. Wilhelm, M. Berlet, Klinikum rechts der Isar der TUM, Munich (DE) [LE-26-00037]

Reevaluation of the Bayesian Network Model to Support Immunotherapy Decision-Making in Recurrent/Metastatic Head and Neck Squamous Cell Carcinoma
M. Stoehr, J. Stoehr, A. Dietz, J. Gaebel, University Hospital Leipzig; University Leipzig (DE) [LE-26-00093]

21st Century CARS – Computer Augmented Replacement Surgery
R. Andrews, WFNS, Los Gatos, CA (US) [LE-40]

16:00-17:45 3rd IFCARS Workshop on Model Guided Medicine in Surgery

Chairs: Dirk F. Wilhelm, MD (DE), Akinobu Shimizu, PhD (JP)

Do we need a certificate for surgical robotics and AI?
Invited Lecture: Dirk F. Wilhelm, MD, Klinikum rechts der Isar der TUM, Munich (DE) [IS-156]

Elements of a model science for clinical decision making
M. A. Cypko, L. Berliner, D. Wilhelm, O. Amft, Hahn-Schickard Gesellschaft für angewandte Forschung e. V., Freiburg; Technical University Munich (DE); Staten Island University Hospital (US) [LE-123]

Certification of surgical robotics in Japan (tbd)
Invited Lecture: Yoshihiro Muragaki, MD, PhD, Kobe University School of Medicine (JP) [IS-157]

Essential features of a Model Science and Model Identity Certificate for a trustworthy Model Guided Medicine
H. U. Lemke, IFCARS, Küssaberg (DE) [LE-1]

Panel Discussion
Chair: Stephen J. Riederer, PhD (US)

17:15-17:30 DOR Poster

Chairs: Kaori Kusuda, PhD (JP)

Safe and Usable Ensemble Formation for Networked Medical Devices: A Comparative Study of 5G, NFC and Pop-Up Pairing
P. Schollmaier, O. Yilmaz, S. Kißmann, M. Goschkowski, F. Beger, D. Wieschebrock, P. Feodorovici, J. C. Arensmeye, D. Fleer, D. Maljevic, K. Radermacher, A. Janß, RWTH Aachen University; BG Kliniken IT-Services GmbH, Berlin; SurgiTAIX AG, Herzogenrath; University Hospital Bonn; Beger Design, Köln; University Hospital Essen (DE) [PO-25-01237]

Simulation-based Detection of Usability Conflicts for an ISO/IEEE 11073 SDC Workstation: A Spine Surgery Case Study
M. Dohms, O. Yilmaz, S. Kißmann, R. Pjontek, L. Busch, C. Blume, K. Radermacher, A. Janß, RWTH Aachen; Uniklinik der RWTH Aachen (DE) [PO (LE)-26-00029]

Evaluation of 5G cellular and Wi-Fi 6 for cable-free surgical navigation using ISO/IEEE 11073 SDC
N. Wickel, P. Schollmaier, K. Radermacher, A. Janß, RWTH Aachen University (DE) [LE-26-00132]

18:00-19:00 CARS 2026 Opening Session

Chairs: Kensaku Mori, PhD (JP), Heinz U. Lemke, PhD (DE)

Opening Talks 1
Pierre Jannin (FR)

Opening Talks 2
Nyangoh Timoh (FR)

40th International Congress and Exhibition on Computer Assisted Radiology (CAR)

Chairs: Ulrich Bick, MD (DE), Stephen J. Riederer, PhD (US)

Friday, July 3, 2026 Conf Room #1

16:00-18:00 CAR Poster

Chairs: Mario A. Cypko, PhD (DE), Rie Tanaka, MD (JP)

Use of patient-specific three-dimensional printed models for developing optimal low-dose CT scanning protocols
Z. Sun, Y. H. Wong, Curtin University of Technology, Perth, WA (AU); Taylor's University, Kuala Lumpur (MY) [PO-22]

Investigation of Ultrasound Image Enhancement and Improvement of Segmentation Accuracy in Hepatic Veins Using Phantom Images

K. Asahi, N. Koizumi, I. Fujii, R. Kasagi, N. Matsumoto, M. Ryota, M. Ogawa, The University of Electro-Communications, Chofu (JP) [PO-26]

Development of a Stepwise Real-Human-Image Similarity Transformation Method for Phantom Ultrasound Images
T. Miura, N. Koizumi, K. Yamada, Y. Nishiyama, P. Chen, J. Zhou, R. Kasagi, I. Fujii, K. Numata, The University of Electro-Communications, Tokyo (JP) [PO-30]

Development and evaluation of an automated subcostal depression point detection system using an RGB-D camera for robotic kidney ultrasonography
K. Iwata, N. Koizumi, N. Matsumoto, Y. Nishiyama, S. Takahashi, A. Hashimura, R. Tsumura, The University of Electro-Communications, Tokyo (JP) [PO-31]

Automatic detection of typographical errors in radiology reports using on premises large language models (LLMs)
M. Nishio, R. Kurosaki, H. Matsuo, T. Matsunaga, T. Murakami, Kobe University (JP) [PO-50]

High-Accuracy and High-Speed Accelerated MRI Reconstruction via Cold Diffusion with Deep Diffusion Image Prior
S. Fukutomi, T. Yokota, H. Hontani, Nagoya Institute of Technology, Nagoya (JP) [PO-53]

Automated Abdominal Aortic Tracing System with Robotic Ultrasound Imaging
A. Hashimura, N. Koizumi, Y. Nishiyama, K. Yamada, S. Takahashi, K. Yoshinaka, R. Tsumura, The University of Electro-Communications, Tokyo; The National Institute of Advanced Industrial Science and Technology, Tsukuba (JP) [PO-72]

Comparison of Parameter-Efficient Fine-tuning Methods for Colonoscopic Video 3D Reconstruction
J. Qiu, Y. Hayashi, M. Oda, T. Tagami, K. Mori, Nagoya University (JP) [PO-74]

Quantum diffusion models for medical image generation: results using real quantum machines
F. A. Venturelli, M. Parigi, S. Martina, F. Caruso, A. Cervera-Lierta, M. A. González Ballester, Universitat Pompeu Fabra; Barcelona Supercomputing Center (ES); University of Florence (IT) [PO-84]

DL-based image registration for intraoperative assistance in endocavitary cardiac procedures
M. N. Chapel, A. Simon, C. Fouard, G. Barone-Rochette, M. Garreau, Université Rennes 1; Univ. Grenoble Alpes; University Hospital of Grenoble (FR) [PO-87]

Longitudinal normative modelling of perinatal cortical development using volumetric and surface-based morphometry
R. González López, G. Martí-Juan, E. Eixarch, O. Camara, M. A. González Ballester, University Pompeu Fabra, Barcelona (ES) [PO-97]

Experimental evaluation of lesion visibility in segmented cerebral vessel visualization
T. Shinohara, H. Kitaguchi, Kindai University, Kinokawa (JP) [PO-100]

Evaluating MPG configuration based on submanifold geometry of dMRI signal model in signal space
Y. Masutani, Y. Ichinoski, Tohoku University School of Medicine, Sendai (JP) [PO-106]

Automated Geometric Evaluation of Radiofrequency Ablation Treatment Margins Using Controlled Circular Tumor Simulation on Abdominal CT
G. Ouyang, Gifu University (JP) [PO-122]

Adapting Segment Anything Model to surgical instrument segmentation via Visual Prompt Tuning
X. Zhu, C. Wang, M. Oda, Y. Hayashi, K. Mori, Nagoya University (JP) [PO-135]

Difference in muscle volume and myosteatosis of lower-limb muscles between knee and hip osteoarthritis: an artificial intelligence–based computed tomography analysis
A. Ito, T. Kutsuna, Y. Otake, K. Uemura, S. Kono, M. Soufi, K. Kono, R. Nishimura, T. Kinoshita, Y. Ihara, Y. Sato, M. Takao, Ehime University Graduate School of Medicine; Nara Institute of Science and Technology; Osaka University; Miyazaki University (JP) [PO-136]

Hierarchical cross-modal fusion for CT report generation
N. Zhong, M. Oda, Y. Hayashi, K. Mori, Nagoya University (JP) [PO-138]

Principle verification of the temperature estimation method for heating point from the temperatures measured around the target point using multiple temperature sensors
S. Tadokoro, K. Kuwana, Tokyo Denki University (JP) [PO-141]

End-to-End Cell Tracking for Dense Cell Scenarios with Mamba and Transformer
L. Wang, Y. Wu, Y. Hayashi, M. Oda, K. Mori, Nagoya University (JP) [PO-146]

Folding-Suppressed Correspondence-Free Deformation Pyramid Registration for Endoscopic 3D Point Clouds
Z. C. Zhang, Y. Hayashi, M. Oda, K. Mori, Nagoya University (JP) [PO-149]

Motorized Rotational 3D Ultrasound for Clubfoot Assessment: Benchtop Design, Slice-to-Volume Reconstruction, and Initial Phantom Testing
D. Crowley, A. Nankani, R. Shekhar, M. Linguraru, R. Monfaredi, Children's National Hospital, Washington, DC (US) [PO-151]

Assessment of automated lesion measurement from ex vivo late gadolinium enhanced MRI in ventricular myocardium following proton beam irradiation in swine
M. Rettmann, T. Koya, T. Hirao, E. Martinez-Gomez, J. Kruse, K. Merrell, D. Shumway, A. Deisher, K. Siontis, Mayo Clinic, Rochester, MN (US); Hokkaido University (JP) [PO-152]

TASP-Net: Text-Anchored Subtraction Prior-Guided Network for Precise Tubular Structure Segmentation
J. Yue, F. Zhou, B. Liu, Beihang University, Beijing (CN) [PO-26-00044]

Multimodal HSI--MRI System for Tumor Delineation in Neurosurgical Guidance
M. Villa, J. Sancho, G. Rosa-Olmeda, A. Enkaoua, M. Chavarrías, E. Juarez, Universidad Politécnica de Madrid (ES); UCL Hawkes Institute, London (GB) [PO-26-00048]

H-QDCT: Hierarchical Quantum DCT for Structural-Textural Feature Fusion in Medical Imaging
X. F. Aragones, M. A. González Ballester, TecnoCampus; Universitat Pompeu Fabra Barcelona (ES) [PO-26-00072]

Tumour-focused 3D-2D Registration in Liver Laparoscopy
M. Alkhatib, M. Zohaib, E. Ozgur, E. Buc, B. Le Roy, Y. Mezouar, A. Bartoli, Clermont Auvergne University, Clermont-Ferrand; Centre Hospitalier Universitaire de Saint-Etienne (FR); University of Genoa (IT) [PO-26-00075]

ESD-VesNet: Uncertainty-Aware Vessel Segmentation Network for Endoscopic Submucosal Dissection with Hard Negative Mining
M. Xu, M. Chen, Z. Li, C. Lyu, A. Wang, R. Zhou, C. Zhao, J. Xiang, T. C. Wong, H. Farahnaki, S. Z. Kiasari, T. Wu, Z. Su, Y. Zeng, R. Wen, X. Shang, Y. Mu, K. Lin, Y. Zhang, H. Ren, The Chinese University of Hong Kong (HK); National University of Singapore (SG); Qilu Hospital of Shandong University, Jinan (CN) [PO-26-00088]

Pseudomorphological Visualization of Esophageal Motility Beyond Pressure Plots
A. Geiger, A. Jell, L. Wagner, D. Wilhelm, H. Feußner, Technical University Munich; Klinikum rechts der Isar der TUM (DE) [PO-26-00095]

PCReg: A Coarse-to-Fine Registration Framework Using Point Cloud Completion for Intraoperative Liver Deformation Correction
Z. Min, M. Liu, X. Du, P. Liu, S. Ma, R. Song, Y. Li, M. Q.-H. Meng, Z. Dong, Shandong University; Qilu Hospital of Shandong University, Jinan; Southern University of Science and Technology, Shenzhen (CN); National Center for Tumor Diseases, Dresden (DE) [PO-26-00098]

CARS Poster

Development of an AI for Evaluating Cytotechnologist Proficiency Using Eye-tracking
T. Miyazawa, K.Abe, Y. Takatori, N. Abe, Y. Nishimura, R. Furuta, Kanagawa Institute of Technology Atsugi; Kitasato University, Kanagawa (JP) [PO-94]

Toward safe and effective pain management in intensive care with reinforcement learning
J. Romero-Hernández, O. Camara, University Pompeu Fabra, Barcelona (ES) [PO-98]

Investigation of material damage by ultraviolet germicidal irradiation technology
A. Schneider, A. R. Ngouloure Nsangou, M. Voß, Jade University of Applied Sciences, Wilhelmshaven (DE) [PO-148]

Artificial Intelligence System for Anatomical Landmark Detection in Rectovaginal Fistula Repair Surgery: Technical Development and Educational Evaluation
K. Murakami, T. Mizukuro, T. Tokuyasu, Soshinkai Nagaokakyo Hospital; Fukuoka Institute of Technology (JP) [PO-25-01307]

From Clinical Challenges to Innovation: An Idea Finding Approach for Advancing Healthcare

E. Spicker, S. Stabenow, S. Rashid, L. Bernhard, C. Haid, M. Berlet, J. Fottner, D. Wilhelm, Klinikum rechts der Isar der TUM; Technical University Munich (DE) [PO-26-00067]

Saturday, July 4, 2026 Symposion Hall

08:00-10:00 Medical Imaging

Chairs: Stephen J. Riederer, PhD (US), Toshiya Yamaguchi (JP)

Unsupervised detection of stroke lesions in brain MRI using a denoising diffusion probabilistic models
H. Sato, K. Sasaki, R. Kawabata, S. Hosokawa, R. Mori, K. Okuda, Hirosaki University (JP) [LE-150]

Automatic Probe Guidance for Volumetric Liver Ultrasound Acquisition via Imitation Learning from a Virtual Expert
T. Han, H. Liang, Q. Zeng, Y. Kang, H. Liao, G. Ning, S. E. Salcudean, Tsinghua University, Beijing; Shanghai Jiao Tong University; Shenzhen Technology University; Shenzhen University (CN); University of British Columbia, Vancouver, BC (CA) [LE-26-00115]

Clinical outcome prediction of Contour Neurovascular System treatment based on pre-treatment geometric and hemodynamics characteristics
F. Gießler, A. Bernovskis, F. Gaidzik, J. Korte, P. Berg, S. Peters, N. Larsen, S. Saalfeld, University Hospital Schleswig-Holstein; Kiel University; Otto von Guericke Universität Magdeburg (DE) [LE-26-00071]

Transient Numerical Simulation of Hemodynamics in Bioprosthetic Heart Valves: Insights into Valve Sizing and Thrombosis Risk
M. Berger, J. Golks, L. Gleissner, T. Senfter, C. Mayerl, N. Bonaros, C. Gollmann-Tepeköylü, L. Stastny, M. Grimm, M. Pillei, Management Center Innsbruck Internationale Hochschule GmbH; Medical University of Innsbruck (AT) [LE-25-00866]

Design and development of an endoscopic robotic system and deep reinforcement learning path planning algorithm for fine needle biopsy of liver lesions
R. Khanna, N. Fischer, Z. Du, C. Bergeles, King's College London (GB) [LE-26-00065]

A Semi-Supervised Diffusion Model for Automated Segmentation of Vascular Plaques
A. Schaap, I.C. van der Schaaf, M. Bechstein, S. Zinger, D. Ruijters, Eindhoven University of Technology; Philips Healthcare, Best; University Medical Center Utrecht (NL); University Medical Center Hamburg-Eppendorf (DE) [LE-26-00052]

Mixed Reality Simulation of Guided Needle Insertion: Effects of Interaction and Visual Fidelity
F. Heinrich, M. Kohpeiß, C. Hansen, D. Schott, Otto-von Guericke University, Magdeburg (DE) [LE-26-00064]

Clinician-aligned explainability analysis of deep learning models for dysplastic neutrophil classification
E.S. Alferez, S. Okkath Krishnanunni, A. S Varrier, J. Velayudhan, J. Rodellar, A. Merino, University Pompeu Fabra, Barcelona (ES) [LE-130]

Saturday, July 4, 2026 Symposion

10:30-12:30 Imaging Informatics 1

Chairs: Krishna Kandarpa, MD, PhD (US), Yoshito Otake (JP)

State-Space Sequential generator with attention-guided discriminator for real-time anomaly detection in breast mammography.
R. Rituraj, O. Díaz, University of Barcelona (ES) [LE-114]

Sensorless 3D Prostate Reconstruction from Freehand TRUS Sweeps: Validating a Geometry-Constraint Algorithm via Axial-Sagittal Cross-Analysis and Anatomical Encoders
T. Nakamura, N. Koizumi, Y. Nishiyama, K. Sasaki, G. Karakida, A. Endo, H. Okada, S. Shoji, The University of Electro-Communications, Tokyo; Tokai University School of Medicine Kanagawa (JP) [LE-28]

Deep learning–based image reconstruction from two-dimensional projection images of planning computed tomography for stereotactic radiotherapy
T. Ikumoto, N. Hara, T. Minagawa, T. Hashimoto, Juntendo University Hospital; Kyorin University, Tokyo (JP) [LE-41]

Multi-Class Segmentation of Cervical Vertebrae in Videofluorography by use of Multi-Channelization and Ensemble Learning

E. Gankhuyag, H. Takizawa, K. Mekata, H. Kudo, University of Tsukuba; Shijonawate Gakuen University, Osaka (JP) [LE-10]

Efficient team-based annotation for endoscopic pituitary surgery using Segment Anything Model 2 assisted active learning
S. Yamamoto, D. Somiya, K. Takeuchi, Y. Nagata, T. Matsuyama, Y. Yamada, I. Takami, Y. Hayashi, K. Mori, R. Saito, Nagoya University Graduate School of Medicine, Nagoya Univ.; National Institute of Informatics, Tokyo (JP) [LE-116]

Assessing choroid plexus segmentation models using simultaneous truth and performance level estimation
J. R. Ferreira Junior, C. L. S. Prazeres, B. F. Pastorello, C. M. Rimkus, C. K. Suemoto, A. C. Goulart, M. C. Otaduy, C. C. Leite, University of São Paulo Medical School (BR) [LE-92]

Exploring the limits of optical flow based label propagation for semantic segmentation
L. Uramoto, Y. Hayashi, M. Oda, T. Kitasaka, K. Mori, Nagoya University, Aichi Institute of Technology (JP) [LE-137]

YOLO-GHOST: tracking occluded high-resolution manometry sensors in video-fluoroscopy swallow studies
M. M. Loureiro da Rocha, D. Brandsma, L. van der Molen, M. van Alphen, M. van den Brekel, F. J. Siepel, University of Twente Enschede; Netherlands Cancer Institute, Amsterdam (NL) [LE-27]

Saturday, July 4, 2026 Symposion Hall

13:30-15:30 Imaging Informatics 2

Chairs: Armin Schneider, PhD (DE), Hidekata Hontani, PhD (JP)

Deep Learning-Based Segmentation of Peritoneal Cancer Index Regions from CT Imaging
P. Gort, L. J.S. Ewals, M. W. Tops-Welten, C. H.B. Claessens, J. Nederend, F. van der Sommen, Eindhoven University of Technology; Catharina Hospital (NL) [LE-26-00035]

Automatic MRI-Based Segmentation of Ablation Zones in Spine and Liver: A Comparative Study of Network Performance and Influencing Factors
J. Rothert, S. Saalfeld, M. Gutberlet, F. Wacker, D. Düx, B. Hensen, M. Becker, G. Rose, G. Hille, Universitätsklinikum Schleswig-Holstein; Kiel University; Hannover Medical School; Otto-von-Guericke-Universität; University Hospital Magdeburg (DE) [LE-26-00069]

Deep learning-based renal artery segmentation and angle estimation for registration of endoscopic images and 3D models in robot-assisted partial nephrectomy
K. Tsukino, S. Kobayashi, S. Takashima, S. Miyauchi, J. Mutaguchi, S. Tsukahara, T. Tanegashima, S. Goto, T. Matsumoto, M. Shiota, R. Kurazume, M. Eto, Kyushu University; Kyushu University Hospital, Fukuoka (JP) [LE-26-00078]

Pose-aware Deep Perceptual Similarity for Iterative 2D/3D Registration of Knee Joints using Contrastive Learning
J. Wang, X. Li, R. Surbeck, S. Ćuković, W. Taylor, ETH Zürich: Eidgenossische Technische Hochschule Zürich (CH) [LE-26-00008]

Myocardial Infarction Detection Framework using Cardiac Motion Estimation with Deformable Registration Field
R. Sasaki, Y. Kurose, J. Iho, Y. Tokunaga, M. Horie, K. Nishizawa, Y. Hayashi, Y. Koyama, T. Harada, The University of Tokyo; Sakurabashi Watanabe Hospital, Osaka (JP) [LE-26-00082]

Correspondence-free Local-to-Global Liver Deformation Correction via Implicit Neural Representation and Biomechanical Model
X. Yang, Z. Yang, B. Huang, Y. Wang, H. Luo, X. Sun, F. Jia, Chinese Academy of Sciences, Shenzhen; Foshan University; Northeastern University, Shenyang (CN); The Chinese University of Hong Kong (HK) [LE-26-00086]

Real-Time Target Tracking Using Image Registration and Motion Prediction
V. Buchanan, E. Lugez, Toronto Metropolitan University (CA) [LE-26-00116]

Sunday, July 5, 2026 Toyoda Auditorium

11:00-13:00 Imaging Informatics 3

Chairs: Miguel Á. González Ballester, PhD (ES)

GLoBAV-Net: Adapting Vessel Foundation Models with Global-Local Aggregation for Pulmonary Artery-Vein Segmentation

S. H. Yang, Y. S. Huang, National Changhua University of Education, Changhua (TW) [LE-76]

A Comparative Study of Rotation Representations for Learning-Based 2D/3D Registration from Digitally Reconstructed Radiographs
Y. Qin, J. Wang, ETH Zurich; Univ. of Zurich (CH) [LE-80]

Sparse-Plane 3D Reconstruction of Left Atrial Anatomy Using Voxel-Based and Neural Implicit Representations
R. Methari, M. Saiz-Vivó, P. Szpetnar, H. Cochet, O. Camara Rey, University Pompeu Fabra, Barcelona (ES) [LE-117]

Clinical DVH metrics as a loss function for 3D dose prediction in head and neck radiotherapy
R. Gao, M. Staring, F. Dankers, Leiden University Medical Center (NL) [LE-26-00055]

A comparative study: HoloLens 2 vs Apple Vision Pro for the localization of rib tumors in a phantom
N. de Groot, J. de Vries, M. Wijnen, C. Hulsker, F. Siepel, L. van der Steeg, M. Fitski, Princess Maxima Center for Pediatric Oncology; University of Twente, Utrecht (NL) [LE-35]

Development of a Deep Learning-Based Cardiac Function Assessment Support System
N. Yashima, N. Koizumi, N. Umetsu, R. Kasagi, Y. Nishiyama, P. Chen. Yamada, H. Tsukihara, The University of Electro-Communications; The University of Tokyo Hospital (JP) [LE-7]

Evaluation of an Automated Workflow for TSN-Based Real-Time Communication in ISO IEEE 11073 SDC-Based Medical Networks
M. Dohms, N. Wickel, K. Radermacher, A. Janß, RWTH Aachen (DE) [LE-26-00063]

Trustworthy Longitudinal 3D CT Report Generation via Interpretable CoT Vision-Language Models
T. Komuro, K. Nguyen, M. Oda, K. Mori, Nagoya University (JP) [LE-147]

28th International Conference on Computer-Aided Diagnosis and Artificial Intelligence (CAD-AI)

Chairman: Hiroyuki Yoshida, PhD (US)

Thursday, July 2, 2026 Conf Room #1

14:50-15:30 Poster

Chairs: Jianfei Liu & Hiro Yoshida

An improved scheme for cytological image finding generation using an original vision-language model with subtype-aware caption prefixes
A. Teramoto, Y. Kiriyama, T. Tsukamoto, N. Yazawa, K. Imaizumi, H. Fujita, Meijo University, Nagoya; Narita Memorial Hospital, Toyohashi; Fujita Health University, Toyoake (JP) [PO-66]

Automatic detection and visualization of pediatric forearm fractures using contrastive language-image pre-training model
H. Suzuki, A. Teramoto, T. Honmoto, A. Niki, T. Kono, H. Fujita, Meijo University, Nagoya; Ibaraki Children's Hospital, Mito; Tokyo Metropolitan Children's Medical Center, Fuchu; Gifu University (JP) [PO-67]

Machine learning analysis of structural magnetic resonance imaging in Taiwanese migraine patients
Y. Y. WANG, S. P. CHEN, C. Y. CHEN, National Yang Ming Chiao Tung University, Taipei (TW) [PO-69]

Deep learning based artificial intelligence can improve the diagnosis of small bowel obstruction
A. Takimoto, Y. Hayashi, L. Jiahui, A. Yasui, C. Shirota, M. Oda, K. Mori, H. Uchida, Nagoya University (JP) [PO-77]

GWR-UNet: a hybrid global window residual UNet transformer for electronic cleansing in CT colonography
R. Tachibana, J. Näppi, M. Okamoto, H. Yoshida, Muroran Institute of Technology; Boston Medical Sciences Inc., Tokyo, (JP); Massachusetts General Hospital, Boston (US) [PO-101]

Detection and Classification of Lesions in Digital Breast Tomosynthesis Using a Two-Stage Deep Learning Pipeline
W. Rahmaniar, K. Suzuki, Z. Jin, F. Beltaief, Institute of Science Tokyo (JP) [PO-124]

Preliminary study of diffusion MRI-based radiomics models for predicting molecular subtype in breast cancer
Y. Ichinoseki, M. Sato, M. Yoshihara, Y. Masutani, Tohoku University, Sendai (JP) [PO-128]

Thursday, July 2, 2026 Conf Room #1

16:00-17:30 CAD-AI 2 Radiomics

Chairs: Janne Näppi & Yukihiro Nomura

Choroid plexus MRI radiomics for brain aging phenotyping
J. R. Ferreira Junior, C. L. S. Prazeres, C. M. Rimkus, C. K. Suemoto, A. C. Goulart, M. C. Otaduy, C. C. Leite, University of São Paulo Medical School (BR) [LE-99]

Influence Of Patients' Sex On Radiomics-based Predictions Of Lung Artery Thrombus
L. Ehrhardt, G. Hille, E. Amini, A. Surov, J. Borggrefe, P. Fiedler, S. Saalfeld, Technische Universität Ilmenau; Johannes Wesling Klinikum Minden; Universitatsklinikum Schleswig Holstein; Kiel University (DE) [LE-26-00049]

Sparse Nonnegative Tensorial Feature Extraction Towards Longitudinal Analysis of Parkinson"s Disease
H. Itoh, M. Oda, S. Saiki, K. Kamagata, W. Sako, K. I. Ishikawa, N. Hattori, S. Aoki, K. Mori, Fukuoka University; Nagoya University; University of Tsukuba; Juntendo University Graduate School of Medicine; National Institute of Informatics, Tokyo (JP) [LE-154]

Decoding Modality Interactions in Medical AI With SyAM: A Light-weight Synergy-Augmented Metric
C. Gapp, E. Tappeiner, M. Welk, K. Fritscher, S. Mangesius, C. Eisenschink, P. Deisl, M. Knoflach, A. Grams, E. Gizewski, R. Schubert, UMIT TIROL, Hall in Tirol; VASCage, Innsbruck; Medical University of Innsbruck (AT) [LE-54]

Application of the homology-feature map quantifying pulmonary fibrotic lesions in computed tomography images for computer-aided diagnosis
K. Doi, H. Numasaki, Y. Anetai, M. Imai, Y. Natsume-Kitatani, National Institute of Biomedical Innovation Health and Nutrition, Osaka; University of Osaka (JP) [LE-47]

Radiomics analysis and classification of esophageal lesions in systemic sclerosis using chest CT images
Y. Ueda, S. Watanabe, R. Ikeda, M. Suzuki, M. Kuwana, H. Takemura, Tokyo University of Science, Noda; Nippon Medical School, Tokyo (JP) [LE-26-00128]

Friday, July 3, 2026 Symposion

08:30-10:00 CAD-AI 3 Prediction Models

Chairs: Miguel González Ballester & Hiroyuki Yoshida

Parameter-efficient fine-tuning of foundation models with a dual-branch architecture for automated breast ultrasound computer-aided diagnosis
R. F. Chang, W. L. Wu, Y. S. Huang, National Taiwan University, Taipei; National Changhua University of Education (TW) [LE-19]

Computer-aided Diagnosis of Lymph Node Metastasis Status Prediction using Breast Ultrasound Image
Y. W. Lee, S. C. Chang, S. Y. Chen, R. F. Chang, Feng Chia University, Taichung; National Taiwan University, Taipei (TW) [LE-24]

Enhanced pix2surv with self-attention and spectral normalization for prognostic prediction of idiopathic pulmonary fibrosis in chest CT
Y. Menuki, J. Näppi, T. Kamiya, H. Yoshida, Kyushu Institute of Technology, Kitakyushu (JP); Massachusetts General Hospital and Harvard Medical School, Boston (US) [LE-25]

Multimodal prediction of transcatheter edge-to-edge repair (TEER) success in functional mitral regurgitation (MR)
I. Vernikouskaya, S. Keckia, V. Rasche, W. Rottbauer, D. Felbel, Ulm University Heart Center (DE) [LE-3]

Hybrid neural network-based outcome prediction in femoral fracture patients using radiological and clinical inputs
I. Vernikouskaya, D. Vogele, P. Kaftan, H. Kestler, F. Gebhard, B. Relja, V. Rasche, N. Becker, Ulm University Heart Center; Ulm University Medical Center; Ulm University (DE) [LE-4]

Predicting treatment for forearm fractures in pediatric population using machine learning

S. Anwar,V. Lam, K. Cleary, Children's National Hospital, The Sheikh Zayed Institute for Pediatric Surgical Innovation, Washington, DC (US) [LE-131]

Friday, July 3, 2026 Symposion Hall

10:30-12:30 CAD-AI 4 Detection Methods

Chairs: Ina Vernikouskaya & Kenji Suzuki

Unsupervised anomaly detection for longitudinal comparison in whole-body PET/CT images
T. Nakao, S. Hanaoka, Y. Nomura, T. Yoshikawa, O. Abe, The University of Tokyo Hospital; Chiba University (JP) [LE-26-00079]

Virtual prior CT generation and simulated temporal subtraction using a diffusion-based generative model for thoracolumbar bone metastasis detection
A. Takamatsu, S. Hanaoka, T. Nakao, S. Miki, Y. Nomura, T. Yoshikawa, S. Hoshiai, S. Kobayashi, O. Abe, Kanazawa University Graduate School of Medical Sciences; The University of Tokyo Hospital; University of Tsukuba (JP) [LE-45]

Performance changes in automated lesion detection under federated learning with sequential institution addition
Y. Nomura, S. Hanaoka, A. Yamada, T. Takenaga, T. Nakao, T. Nakaguchi, T. Yoshikawa, O. Abe, Chiba University; The University of Tokyo Hospital (JP) [LE-26-00014]

2.5-D lung nodule detection on LDCT using tri-slice context encoding and probability-weighted 3-D NMS with YOLOv13
Z. X. Lin, Y. S. Huang, National Changhua University of Education (TW) [LE-119]

AI-Assisted Detection of Scaphoid Fractures in Radiographs Using Small-Data Massive-Training Artificial Neural Network
J. Takeshita, C. Li, Z. Jin, H. Oshibe, T. Waki, T. Ibara, K. Fujita, K. Suzuki, Institute of Science Tokyo, Kyushu Univ. (JP) [LE-133]

A Semi-Supervised Diffusion Model for Automated Segmentation of Vascular Plaques
J. Liu, P.T.S. Balamuralikrishna, L. Locke, P. J. Pickhardt, R. M. Summers, National Institute of Health Clinical Center, Bethesda, MD; University of Wisconsin, Madison, WI (US) [LE-26-00140]

Deep learning-assisted 3D reconstruction workflow to support parotid gland tumor surgery
M. Moll, N. Postmus, L. Braun, L. Karssemakers, M. Valstar, L. Zuur, L. Smeele, M. van Alphen, Antoni van Leeuwenhoek - Netherlands Cancer Institute, Amsterdam (NL) [LE-79]

Development of an image reconstruction-based source localization method for a forceps-type positron-emission counter
R. Ohashi, S. Takyu, S. Ito, M. Takahashi, T. Yamaya, National Institutes for Quantum Science Technology, Chiba; Mirai-Imaging Co., Fukushima (JP) [LE-115]

Friday, July 3, 2026 Symposion

13:30-13:45 Keynote

Chair Hiro Yoshida

Small-Data Deep Learning for Rare to Major Cancer Diagnosis
Kenji Suzuki

Friday, July 3, 2026 Symposion

13:45-15:30 CAD-AI 5 Vision-language and Classification Models

Chairs: Ines Machado & Shohei Hanaoka

Visual question answering-based image-finding generation for pulmonary nodules on chest CT from structured annotations
M. Nagao, K. Urata, A. Teramoto, K. Imaizumi, M. Kondo, H. Fujita, Meijo University, Nagoya; Fujita Health University, Toyoake; Gifu University (JP) [LE-26-00040]

Development of a radiological RAG reference system for AI radiologist's assistant
P. Sakharova, A. Gordeev, M. Varyukhina, R. Erizhokov, A. Borisov, O. Omelyanskaya, A. Vladzymyrskyy, Y. Vasilev, Research and Practical Clinical Center for Diagnostics and Telemedicine Technologies of the Moscow Health Care Department, Moscow (RU) [LE-13]

Auto-regressive VLM to Interpret Longitudinal 3D CT Volumes: Proof of Concept
C. K. Nguyen, C. Wang, Y. Heng, Z. Shi, C. Qi, M. Oda, K. Mori, Nagoya University (JP) [LE-26-00137]

Visual Word and Clinical Finding–Aware Bayesian Network for Dermatological Image Classification
T. Andrews, M. Cypko, Y. Fujisawa, E. Kimura, A. Shimizu, Tokyo University of Agriculture and Technology; Ehime University (JP); Hahn-Schickard-Gesellschaft für angewandte Forschung e.V., Freiburg (DE) [LE-51]

Generation of chest CT pulmonary nodule images by latent diffusion models using the LIDC-IDRI dataset
K. Urata, M. Nagao, A. Teramoto, K. Imaizumi, M. Kondo, H. Fujita, Meijo University, Nagoya; Fujita Health University, Toyoake; Gifu University (JP) [LE-26-00041]

Hybrid Deep Learning Strategies for Automated BI-RADS Breast Density Classification in Mammography
L. Xavier, S. Mahmoudi, J. H. TeubouMelonou, University of Mons (BE) [LE-90]

SalientNet: Mechanistic and Reliable Saliency Maps for Medical Image Classification via Unsupervised Learning
S. Sekar, A. Guna R T, M. A. González Ballester, S. O K, University of Pompeu Fabra, Barcelona (ES); New York University (US); Amrita University, Coimbatore (IN) [LE-26-00050]

Friday, July 3, 2026 Symposion Hall

16:00-17:30 CAD-AI 6 Pelvic and Gastro-intestinal AI

Chairs: **Ruey-Feng Chang & Akinobu Shimizu**

Diagnosis of Endometriosis Using Raman Spectroscopy of Biological Liquids
K. E. Williams, R. E. Ellis, Queen's University, Kingston, ON (CA) [LE-58]

Multimodal Graph-based Classification of Esophageal Motility Disorders
A. Geiger, L. Wagner, D. Rueckert, A. Knoll, D. Wilhelm, A. Jell, Technical University Munich; Klinikum rechts der Isar der TUM (DE) [LE-26-00053]

3DColonSwin: leveraging local convolution with self-attention for computer-aided polyp detection in laxative-free CT colonography
J. Näppi, M. Okamoto, H. Yoshida, Massachusetts General Hospital and Harvard Medical School, Boston, MA (US); Boston Medical Sciences, Inc., Tokyo (JP) [LE-5]

Geometric design optimization of AI-aided system for reliable detection of flat lesions in CT colonography
Z. Jin, H. Oshibe, M. Miyake, M. Jinzaki, K. Suzuki, Institute of Science Tokyo, Yokohama; National Cancer Center Hospital; Keio University School of Medicine, Tokyo (JP) [LE-89]

Comparison of False-Positive Patterns in AI-Based Polyp Detection for CT Colonography: Iodine- vs. Barium-Based Fecal Tagging
H. Takahashi, J. J. Näppi, A. Uchida, Y. Okawa, K. Nagura, Y. Yamada, M. Okamoto, H. Yoshida, Boston Medical Sciences, Inc., Tokyo; Massachusetts General Hospital; Harvard Medical School, Boston (JP) [LE-39]

Foundation model-based multi-teacher distillation for computer-aided diagnosis of ulcerative colitis
Y. Y. Chang, H. P. Yang, Y. S. Huang, H. H. Yen, National Taichung University of Science and Technology, Taichung City; National Taiwan University Taipei; Changhua Christian Hospital (TW) [LE-20]

18th CARS Clinical Day - Innovative Clinical Investigations

Chairs: Dirk F. Wilhelm, MD (DE), Yoshihiro Muragaki, MD (JP)

Sunday, July 5, 2026 Symposion Hall

14:00-15:15 Clinical Day 1

Chairs: Dirk F. Wilhelm, MD (DE), Yoshihiro Muragaki, MD (JP)

Ultrasound Imaging Stability Index Guided Co-adaptive Control Framework for Real-time Ultrasound-Guided Tissue Extraction for Minimally Invasive Autopsy
K. Zuo, J. Chen, K. Yamamoto, K. Inai, E. Kobayashi, The University of Tokyo; Nagoya Institute of Technology (JP) [LE-104]

Improving boundary robustness for multi-organ histopathological adenocarcinoma segmentation with morphology-aware semantic conditioning in pathology images
G. Huang, C. M. Chen, National Changhua University of Education (TW) [LE-110]

Reliable multi-class classification of malignant lymphoma pathology images via conformal prediction
N. Hashimoto, H. Miyoshi, I. Takeuchi, RIKEN, Nagoya; Kurume University, Kurume; Nagoya University (JP) [LE-111]

Pathological Image Generation Explicitly Incorporating Statistical Properties of Tissues
K. Murakami, R. Koga, T. Yokota, I. Takeuchi, N. Hashimoto, H. Miyoshi, Y. Kenmochi, H. Hontani, Nagoya Institute of Technology; Nagoya University; RIKEN, Tokyo; Kurume University (JP); Ecole Nationale Supérieure d'Ingénieurs de Caen (ENSICAEN), Caen (FR) [LE-105]

Pilot Feasibility: Multisensor Mobile App-based Telemonitoring for Heart Failure Patients
M. Bernardes, J. Brosig, L. Bautz, L. Rebscher, J. Franz, L. Kretzler, C. Claussen, C. Kallmayer, T. Kühne, A. Hennemuth, Fraunhofer-Institut fur Digitale Medizin MEVIS, Bremen; Charité - Universitätsmedizin Berlin; Deutsches Herzzentrum der Charité (DE) [LE-26-00030]

Sunday, July 5, 2026 Symposion Hall

16:00-18:00 Clinical Day 2

Chairs: Pierre Jannin, PhD (FR), Yoshinobu Takeshita (JP)

Model science for women's health (tbd)
Invited Lecture: Krystel Nyangoh Timoh, MD, PhD, Pierre Jannin, PhD, University of Rennes (FR) [IS-159]

Vision Transformers for Preoperative CT-Based Prediction of Histopathologic Chemotherapy Response Score in High-Grade Serous Ovarian Carcinoma
I. Prata Machato, F. Fati, F. Coutinho, M. Reinius, M. Rosanu, G. Funingana, L. De Vitis, G. Schivardi, H. Clayton, A. Traversa, Z. Gao, G. Penteado, S. Gao, F. Pastori, R. Woitek, M.C. Ghioni, G.D. Aletti, M. Jimenez-Linan, S. Burge, N. Colombo, et al, University of Cambridge (GB) [LE-26-00105]

BirthARssistant: A Childbirth Delivery Training Simulator Integrating Microsoft HoloLens2, 3D-Printing and Electromagnetic Tracking
A. González Aranda, M. García-Sevilla, J. León-Luis, J. Pascau, A. Pose-Díez-de-la-Lastra, Universidad Carlos III de Madrid; Hospital Materno Infantil Gregorio Marano (ES) [LE-26-00096]

Panel Discussion
TBD

32nd Computed Maxillofacial Imaging Congress (CMI)

Chair: Christos Angelopoulos, DDS (US)

Saturday, July 4, 2026 Symposion Hall

16:00-17:15 CMI 1

Chairs: Naoki Tomii, PhD (JP)

Towards the automated Measurement of Mucosa and buccal Bone Thickness using intraoral Ultrasound
P. Brößner, F. Christleven, N. Petrova, A. Benninghaus, F. Lebe, J. Marotti, K. Radermacher, RWTH Aachen University (DE); Medical University of Graz (AU) [LE-23]

Application Validation of an Intelligent Oral and Craniomaxillofacial Surgical Robot in Bimaxillary Orthognathic Osteotomy
L. Jiang, J. Wu, T. Lan, X. Xu, C. Yang, S. Zhang, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine (CN) [LE-44]

From technical innovation to clinical implementation: 3D models for parotid gland surgery
M. Moll, C. Arends, L. Braun, M. van Alphen, M. Valstar, L. Zuur, L. Smeele, L. Karssemakers, Antoni van Leeuwenhoek - Netherlands Cancer Institute, Amsterdam (NL) [LE-83]

A Model-Guided Workflow for Patient-Specific Zygomatic Implant Entry Point Definition and Integrated Path Planning
X. Fan, B. Tao, X. Jiang, X. Chen, University of Münster (DE); Shanghai Ninth People's Hospital (CN) [LE-120]

Robust Tooth Segmentation from Both Standard and Non-standard Dentition Models
I. Nakashima, K. Morooka, Y. Nakamae, A. Kiyota, M. Yasumitsu, K. Kono, H. Kamioka, Kumamoto University, Okayama University, Graduate School of Medicine (JP) [LE-153]

Saturday, July 4, 2026 Auditorium

17:15-17:30 CMI 2 Poster

Chairs: Naoki Tomii, PhD (JP)

Sensitive area of an automated convolutional neural network for detecting osteoporosis on dental panoramic radiograph
S. J. Yoon, H. Choi, J. S. Lee, Chonnam National University, Gwangju (KR) [PO-29]

Partial point cloud registration between intraoral scan meshes and CT images using local deep descriptors and iterative optimization
H. Kayo, S. Mitarai, H. Ozaki, Y. Imai, M. Nakao, Kyoto University; Rakuwakai Otowa Hospital, Kyoto (JP) [PO-49]

Surgical Phase Recognition in Orthoganthic Surgery Using OMS-YOLOE
D. He, B. Li, Ninth People's Hospital, Shanghai JiaoTong University School of Medicine (CN) [PO-108]

29th Annual Conference of the International Society for Computer Aided Surgery (ISCAS)

Chairs: Kensaku Mori, PhD (JP), Cristian A. Linte, PhD (US)

Saturday, July 4, 2026 Conf Room #1

10:30-12:30 ISCAS Poster

Chairs: Maina Sogabe, MD (JP)

Self-supervised shape registration of lungs using anatomical and depth cues for thoracoscopic intraoperative guidance
K. Maeda, Y. Kadomatsu, H. Ueno, T. Fengshi Chen-Yoshikawa, M. Nakao, Kyoto University; Nagoya University Hospital (JP) [PO-33]

Quantitative Evaluation of Tissue Damage Caused by Electric Scalpel: Effects of Scalpel Tip Movement Speed and Tensile Force on Tissue.
R. Umeda, E. Kobayashi, D. Kim, Oita University, Yufu City; University of Tokyo; Kanagawa Institute of Technology (JP) [PO-37]

A preliminary study of simulation-supervised learning for vision-based force estimation
W. Zhuang, K. Masui, N. Kume, M. Kano, M. Nakao, Kyoto University (JP) [PO-57]

Computer-Assisted C1 Pedicle Screw Fixation in the Treatment of Atlantoaxial Instability: Anatomical Considerations and Clinical Outcomes
C. J. Chang, J. J. Fang, Cathay General Hospital, Taipei; National Cheng Kung University, Tainan (TW) [PO-75]

Workflow quantification using automated surgical phase recognition in robotic choledochal cyst excision surgery: analysis of 20 consecutive cases
A. Yasui, H. Uchida, Y. Hayashi, M. Oda, K. Mori, Nagoya University Graduate School of Medicine (JP) [PO-86]

Sound Source Localization in the OR - a new Approach for Intraoperative Workflow Analysis
L. Wegener, F. A. Diaz Laverde, M. Bergholz, K. Bengler, D. Wilhelm, J. Fuchtmann, TUM University Hospital; Technical University of Munich (DE) [PO-91]

Empirical Feasibility of a Sensorless Quantitative Measurement Framework for Evaluating Gender-Sensitive Surgical Instruments under Occlusion
Y. Hayashi, M. Shirakawa, R. Tsugawa, K. Nakashima, M. Uemura, Kumamoto University (JP) [PO-102]

Development of an evaluation platform for empirical studies on the usability of surgical instruments considering gender differences
M. Shirakawa, Y. Hayashi, R. Tsugawa, K. Nakashima, M. Uemura, Kumamoto University (JP) [PO-103]

A compression control to reduce Postoperative Pancreatic Fistula associated with stapler Based on reaction-force features detection
Z. Li, D. Kim, A. Sasaki, K. Yamamoto, M. Sogabe, E. Kobayashi, The University of Tokyo; Kanagawa Institute of Technology (JP) [PO-107]

Traction force measurement method considering the object bending using a sensorized forceps
H. Matsushima, Y. Takei, K. Kuwana, Tokyo Denki University (JP) [PO-132]

Development of an Adjustable-Pressure Tourniquet Aiming to Reduce Patient Burden
Y. Takei, H. Murata, H. Maeda, M. Maeda, K. Kuwana, S. Terasaka, T. Shimoohkawa, A. Nagatsuma, H. Anzai, K. Mitsui, Tokyo Denki University; Maeda Hospital; Sanyo Metal Industry; Nagatsuma living Co.; NZAI Co. (JP) [PO-139]

Realistic Tool–Tissue Interaction for Robotic Suturing in Isaac
U. Tümerdem, M. S. Hamarat, A. Kayıkçı, M. Kara, Marmara University, Istanbul (TR) [PO-143]

A method for presenting anatomical structures extracted from laparoscopic images based on uncertainty estimation in surgical assistance system for laparoscopic surgery
Y. Hayashi, K. Misawa, T. Aoyama, K. Mori, Nagoya University; Aichi Cancer Center Hospital; National Institute of Informatics (JP) [PO-145]

Automated Quantitative Assessment of Pre- and Postoperative Screw Position in Cervical Pedicle Screw Implantation
J.-J. Fang, Y.-C. Hsiao, K.-C. Chang, C.-J. Chang, National Cheng Kung University, Tainan; Cathay General Hospital, Taipei (TW) [PO-26-00010]

A Fully Automated CT-Based Pelvimetry Pipeline for Quantifying Mid-Pelvic Surgical Workspace in Rectal Cancer
S.-F. Huang, H.-P. Tseng, C.-W. Hsu, Kaohsiung Veterans General Hospital, Kaohsiung City (TW) [PO-26-00016]

Dual-View Fusion of Log-Mel Spectrogram Encodings for Dysarthria Detection: Use in the Context of Awake Brain Surgery
N. bdallah, H. Misy, J.-M. Marion, C. Kanthila, C. Panheleux, V. Saliou, R. Seizeur, G. Dardenne, University Hospital of Brest; Catholic University of the West, Angers (FR) [PO-26-00024]

Contactless robotic system for linear catheter advancement using magnetic actuation.
L. Sianca, J. Stallkamp, J. Moviglia, Heidelberg University, Mannheim (DE) [PO-26-00032]

Improving Hand-Eye-Coordination in Laparoscopy using a Virtual Endoscope Monitor
B.M. Weber, M. Connan, A. Kirst, D. Schneider, L. Wegener, M. Berlet, J. Fuchtmann, D. Wilhelm, J. Klodmann, German Aerospace Center, Wessling; Klinikum rechts der Isar der TUM, Munich; (DE); Johns Hopkins University, Baltimore, MD (US) [PO-26-00042]

Surgical Bleeding Prediction using Transformer: an Application to Laparoscopic Cholecystectomy
Y. Wang, V. Augusto, C. Pehlivan, J. Fleck, N. Mekhenane, Ecole Nationale Supérieure des Mines de Saint-Etienne; University Paris Saclay, Villejuif (FR); Yeditepe University, Istanbul (TR) [PO-26-00059]

Toward Soft-Robotic Image-Guided Tumor Puncture: Development and Control of a HASEL Actuator for Integration into a Novel Soft Robotic Concept
F. Sadi, U. F. Herrmann, M. Siegfarth, Heidelberg University, Mannheim (DE) [PO-26-00060]

Implementation of monocular near-infrared camera tracking in MRI and CT navigation systems
J. Moviglia, L. Kuntz, F. Kehrein, U. F. Herrmann, J. Stallkamp, M. Siegfarth, Heidelberg University, Mannheim (DE) [PO-26-00061]

Surgeon Posture Evaluation During Simulated Laparoscopic and Robotic-Assisted Cholecystectomy
J. Reinhardt, M. Bergholz, L. Wegener, J. Fuchtmann, R. Rack, K. Bengler, D. Wilhelm, Technical University Munich; Klinikum rechts der Isar der TUM (DE) [PO-26-00070]

PICO: Projection-Informed Consistency Optimisation for 6DoF Surgical Tool Pose Estimation
L. E. Fothergill, P. Valdastri, D. Jones, D. Sarikaya, University of Leeds (GB) [PO-26-00076]

Augmented reality for intraoperative verification of surgical template placement
G. Vanni, F. Simi, M. Carbone, P. D. Parchi, V. Ferrari, University of Pisa (IT) [PO-26-00077]

Introducing FRAM as a tool for surgical process modeling: A case study for understanding surgical scheduling complexity
S. Rashid, R. Weber, A. Geiger, L. Wagner, L. Bernhard, E. Spicker, A. Jell, J. Fottner, D. Wilhelm, N. Grabbe, Klinikum rechts der Isar der TUM; Technical University Munich (DE) [PO-26-00090]

Modular Instrument Actuation Unit for Robotic Assisted Systems in Laparoscopic Surgery
D. N. Schneider, L. Fäth, S. Stabenow, A. Kirst, D. Wilhelm, Klinikum rechts der Isar der TUM; Technical University Munich; German Aerospace Centre, Wessling (DE) [PO-26-00094]

Enhancing Critical View of Safety Recognition Using Vision Foundation Models and State-Space Temporal Modeling
R. Guo, B. Mueller, R. Zhang, X. Liu, Intuitive Surgical Inc, Peachtree Corners, GA (US) [PO-26-00114]

Personalized Alveolar Molding Plate Treatment Planning using Automated 3D Landmarking and Deep Learning in Neonates with Unilateral Cleft Lip and Palate
A. Aharonyan, S. Anwar, H. Choo, Children's National Hospital, Washington, DC; Stanford University, Palo Alto, CA (US) [PO-26-00117]

Assessing Selective Interaction for Reliable and Trustworthy Robotic Surgical Assistance
J. Colan, A. Davila, Y. Yamada, K. Mizawa, H. Yasuhisa, Nagoya University; Aichi Cancer Center Hospital (JP) [PO-26-00119]

Saturday, July 4, 2026 Toyoda Auditorium

13:30-15:30 ISCAS 1 Image-guided Navigation & Intervention Applications

Chairs: **Leo Joskowicz & Shinya Onogi (JP)**

Development of an automated MRI-TRUS registration system focusing on the prostatic apex
A. Endo, N. Koizumi, Y. Nishiyama, P. Chen, J. Zhou, K. Yamada, G. Karakida, R. Kasagi, T. Nakamura, S. Shoji, The University of Electro Communications, Chofu; Tokai University Kanagawa (JP) [LE-34]

Intraoperative electrocorticography grid localization in epilepsy surgery
W. Maathuis, S. Verschuren, S. Hoogteijling, P. van Eijsden, N. van Klink, M. Zijlmans, UMC Utrecht (NL) [LE-52]

Development of a markerless 3D posture analysis system for endoscopic procedures using deep learning
H. Sakakibara, T. Shibata, J. Hasegawa, H. Yamada, A. Teramoto, Meijo University; Nagoya; Aichi Shukutoku University, Nagoya; Chukyo University, Toyota; Fujita Health University, Toyoake (JP) [LE-68]

A hybrid deep learning framework for longitudinal multi-modal MRI segmentation and post Stereotactic Radiosurgery outcome prediction of vestibular schwannoma
S. Attia, Y. Shohan, S. Hayman, E. Harari, A. Berger, Y. Hillman, L. Joskowicz, The Hebrew University of Jerusalem; Hadassah University Medical Center, Jerusalem (IL) [LE-71]

Couinaud Segment Aware Deep Learning on Point Cloud for Major Liver Resection Planning
J. Rakshit, J. Rothert, G. Hille, T. Huber, H. Lang, R. Margies, F. Huettl, S. Saalfeld, Universitatsklinikum Schleswig-Holstein, Kiel; Kiel University; Johannes Gutenberg-University, Mainz; (DE) [LE-26-00045]

Resection Zone Prediction for Parenchyma-Sparing Hepatectomy Planning: A Comparative Study of Three Modeling Paradigms
J. Rothert, J. Rakshit, J. L. Salz, F. Huettl, V. Ehses, T. Huber, H. Lang, S. Saalfeld, G. Hille, Universitätsklinikum Schleswig-Holstein; Kiel University; Johannes Gutenberg-University; University Medical Center, Mainz; Otto-von-Guericke-University Magdeburg (DE) [LE-26-00057]

Dynamic Uncertainty Level Assessment Framework for Real-Time Needle Tracking in CT-Guided Surgical Environments
M. Steiger, M. Rezapourian, R. Marko, C. Hansen, Otto von Guericke University; University Hospital Magdeburg (DE) [LE-26-00103]

Assessment of biomechanical stability in trauma surgery training using a digital twin and finite element modeling
T. Stauffer, R. Bearth, R. Babst, M. Meboldt, Q. Lohmeyer, ETH Zürich; University of Lucerne (CH) [LE-26-00122]

Saturday, July 4, 2026 Toyoda Auditorium

16:00-17:30 ISCAS 2 Neurosurgical and Orthopedic Applications

Chairs: Cristian Linte (US)

Advanced intra-surgical management using transcranial MEP trend in gliomas located near motor function area
M. Tamura, B. Ro, S. Koriyama, T. Kobayashi, M. Nitta, T. Saito, T. Maruyama, T. Kawamata, K. Masamune, Y. Muragaki, Tokyo Women's Medical University (JP) [LE-127]

Intraoperative Ultrasound–Based Brain Tumor Boundary Delineation for Surgical Guidance Under Brain Shift
S. Zhang, L. Ma, X. Wang, Y. Shen, Y. Li, H. Liao, Tsinghua University; Xuanwu Hospital Capital Medical University, Beijing (CN) [LE-26-00121]

From Pre- to Intra-operative MRI: Predicting Brain Shift in Temporal Lobe Resection for Epilepsy Surgery
J. Peng, G. Fiore, Y. Liu, K. Ellum, D. Daspupta, K. Ashkan, A. McEvoy, A. Miserocchi, S. Ourselin, J. Duncan, A. Granados, King`s College London; NHS King's College Hospital; National Hospital for Neurology and Neurosurgery; University College London (GB); Ospedale Maggiore di Milano (IT) [LE-26-00125]

CT-Based Navigation Reduces Outliers and Improves Osteotomy Precision in Curved Varus Osteotomy for Osteonecrosis of the Femoral Head: A Retrospective Comparative Study
T. Kutsuna, K. Kono, R. Nishimura, A. Itou, N. Mashima, R. Higuchi, S. Kono, K. Takashima, K. Uemura, H. Hamada, M. Takao, Ehime University; Osaka University Graduate School of Medicine (JP) [LE-78]

A usability-driven workflow for virtual fracture reduction using an open platform with ICP
C. Manfredi, G. Vanni, M. Carbone, E. Tiribilli, E. Denisova, V. Ferrari, University of Pisa; Imaginalis S.R.L, Florence (IT) [LE-26-00074]

Electromagnetic Navigation for Femoral Osteotomy Using High-Accuracy X-ray-to-CT Registration
R. Flepp, A. Nieuwland, B. Sigrist, P. Fürnstahl, L. Calvet, T. Dreher, University Children's Hospital Zurich; Balgrist University Hospital (CH) [LE-26-00104]

Sunday, July 5, 2026 Toyoda Auditorium

08:30-10:30 ISCAS 3 Surgical Workflow, Simulation, Education and Training

Chairs: Pierre Jannin & Tetsuya Ishimaru, MD (JP)

Cholec80-port: a geometrically consistent trocar port segmentation dataset for robust surgical scene understanding
S. Kikuchi, A. Kouno, H. Matsuzaki, Jmees Inc., Chiba (JP) [LE-32]

Development of a reusable hierarchical surgical workflow framework: quantitative analysis across 10 abdominopelvic and retroperitoneal procedures
S. Ladstaetter, W. Zhu, A. Halpern, K. J. Jawed, K. Cleary, Children's National Hospital, The Sheikh Zayed Institute for Pediatric Surgical Innovation; Georgetown University School of Medicine, Washington, DC (US) [LE-129]

GPU-accelerated organ deformation using cube shape constraints for real-time surgical simulation
R. Miyazaki, Y. Hayashi, M. Oda, K. Misawa, K. Mori, Nagoya University; Aichi Cancer Center Hospital Nagoya (JP) [LE-134]

A Granular Interaction Framework for Surgical Robotic Digital Twin: Enabling Realistic Segment-Level Manipulation in Extended Reality
A.–N. Vo, D. Subramani, J. Schmidt, J. Arensmeyer, P Feodorovici, University Hospital Bonn (DE) [LE-26-00073]

Please follow the rules: Surgical workflow recognition constrained by linear temporal logic
D. Tayupo, A. Huaulmé, K. Nyangoh Timoh, J. S.H. Baxter, P. Jannin, Université de Rennes; CHU Rennes (FR) [LE-26-00092]

Assessment of Open Surgery Suturing Skills via Markerless Hand Tracking: A Multi-Stage Approach using 3D Hand Skeleton and Kinematic Metrics
N. Constans, M. Mitrea, N. Neumann, N. Chakfe, TELECOM SudParis, Palaiseau; CHU Strasbourg; GEPROMET (FR) [LE-26-00101]

Simulation of Apically Grounded Cochlear Implant Stimuli using Neural Stimulation Models
J. Rybarczyk, E. Bratu, R. Labadie, J. Noble, Vanderbilt University, Nashville, TN (US) [LE-26-00118]

Sunday, July 5, 2026 Toyoda Auditorium

11:00-12:30 ISCAS 4 Augmented / Virtual / Mixed / Extended Reality (AR/VR/MR/xR)

Chairs: Pierre Marta Kersten-Oertel & Hiroshi Seno, PhD (JP)

Invited talk (Geometric deep learning for 3D-2D multimodal fusion in surgical augmented reality)
Sharib Ali

VIVIE: Virtually Integrated Ventricular Intervention Environment and its Effectiveness as a Teaching and Learning Tool
P. L. P. O'Connor, K. M. Mccombe, S. De Ribaupierre, R. Eagleson, M. Kersten-Oertel, Concordia University, Montreal, QC; University of Western Ontario, London, ON (CA) [LE-26-00109]

Augmented reality visualization of an electromagnetic tracking based surgical navigation system: a conceptual paper
J. van der Zee, N. de Groot, V. van Boheemen, M. Fitski, L. van der Steeg, Princess Maxima Center for Pediatric Oncology, Utrecht (NL) [LE-36]

Integrating artificial intelligence and augmented reality for intraoperative ultrasound–guided neurosurgical tumor localization: a phantom study
K. Klein Gunnewiek, S. Eggermont, N. de Groot, J. van der Zee, T. van Doormaal, L. van der Steeg, K. Kersbergen, E. Hoving, Princess Maxima Center for Pediatric Oncology; University Medical Center Utrecht (NL); University Hospital of Zürich (CH) [LE-38]

Design of a magnetic rotation encoder compatible with electromagnetic tracking systems for augmented reality laparoscopy
D. Crowley, L. Lobo, A. Halpern, R. Shekhar, Children's National Hospital, Washington, DC (US) [LE-125]

LapAR: A Clinical Augmented Reality System for Real-Time Fusion of Laparoscopic Video and Laparoscopic Ultrasound
R. Shekhar, L. Lobo, D. Crowley, A. Halpern, W. Plishker, T. Nguyen, T. Kane, Children's National Hospital, Sheikh Zayed Institute for Pediatric Surgical Innovation, Washington, DC; IGI Technologies, Silver Spring (US) [LE-140]

Sunday, July 5, 2026 Toyoda Auditorium

14:00-15:30 ISCAS 5 Instrumentation & Robotics

Chairs: Kevin Cleary & Jumpei Arata, PhD (JP)

Robot and motorized insertion tool for cochlea implantation: From bench to bedside (Hearo and Otodrive)
M. Caversaccio, Inselspital, University Hospital Bern (CH) [LE-6]

Design and Evaluation of a Spiral Propulsion Mechanism for a Self-Propelled Guidewire
K. Osawa, T. Teranishi, D. S. V. Bandara, J. Arata, Kyushu University, Fukuoka (JP) [LE-48]

Phase-Conditioned Anatomy for Decision-Level Learning Toward Autonomous Robotic-Assisted Partial Nephrectomy
M. Otoom, K. Jawed, K. Cleary, Children’s National Hospital, The Sheikh Zayed Institute for Pediatric Surgical Innovation, Washington, DC (US) [LE-88]

The relationship between duration of high force usage and Parkland grading scale complexity during dissection-related tasks in robotic-assisted cholecystectomy
N. Rameswarapu, L. Purvis, M. Uraz, C. Stricklin, B. Mlambo, C. Herndon, Intuitive Surgical, Norcross (US) [LE-96]

Decision Support Framework for Feasible Installation of a Stewart Platform Fracture Reduction Robot under Anatomical and Mechanical Constraints
M. Kim, H. Bang, S. Joung, AIRS Inc., Daegu (KR) [LE-118]

Robotic Ultrasound Scanning Platform with Autonomous Control, Multimodal Human-Machine Interface and Real-Time Image Analysis
R. Benito, L. Pérez Sánchez, A. Iribar-Zabala, M. Ojer, M. Garro, V. de Ramos, J. Ortega, Á. Bertelsen, X. Lin, I. Sánchez-Varo, L. Salazar, J. A. Sánchez-Margallo, M. Brudfors, N. Daher, K. López-Linares, D. Scorza; M.A. González Ballester, VICOMtech; Cyber Surgery, San Sebastian; Jesús Usón Minimally Invasive Surgery Centre, Cáceres; Universidad Carlos III de Madrid; Universitat Pompeu Fabra, Barcelona (ES); NVIDIA (DE) [LE-26-00066]

IPCAI 2026 - 16th International Conference on Information Processing in Computer-Assisted Interventions

General Chairs: Stamatia (Matina) Giannarou, PhD (GB), Orcun Göksel, PhD (SW), Caroline Essert, PhD (FR)

Program Chairs: Sophia Bano, PhD (GB), Duygu Sarikaya, PhD (GB), Yueming Jin (SG)

Thursday, July 2, 2026 Toyoda Auditorium

9:00-9:15 IPCAI 2026 Opening

9:15-10:30 (1S): Machine Learning for Computer-Assisted Interventions (short oral presentations)

Chairs: Stamatia Giannarou, Syed Muhammad Anwar

Shift Happens: A Fairness-Oriented Framework for Medical Classification under Hidden Bias
M. N. N. To, D. Kim, M. Harmanani, P. Wilson, F. Fooladgar, S. Sojoudi, A. Jamzad, S. Abdalla, T. Tsang, C. Luong, S. Chang, P. Black, R. Siemens, M. Leveridge, R. Krishnan, P. Mousavi, P. Abolmaesumi [ID 17]

ProtoFlow: Interpretable and Robust Surgical Workflow Modeling with Learned Dynamic Scene Graph Prototypes
F. Holm, G. Ghazaei, N. Navab [ID 33]

SPARTAN: Surgical Peg-And-Ring Triplet and Workflow Anticipation Benchmark
F. Cunico, M. Sandrini, N. Piccinelli, R. Muradore [ID 35]

DSTED: Decoupling Temporal Stabilization and Discriminative Enhancement for Surgical Workflow Recognition
Y. Chen, K. Wang, D. Tayupo, A. Huaulmé, K. N. Timoh, P. Jannin, Q. Dou [ID 41]

GEN-Guard: Correcting Generalization Failures for Deployable Federated Surgical AI
J. Alekseenko, P. Mascagni, AI4SafeChole Consortium, N. Padoy [ID 64]

TBDM: Temporal Boundary Distillation Module for Surgical Gesture Segmentation
E. Ekmekci, S. Frey, S. Majhi, K. Hamadi, H. Delingette, W. Wei, M. Durand, P. Berthet-Rayne, F. Bremond, N. Ayache [ID 82]

Learning from Single Timestamps: Complexity Estimation in Laparoscopic Cholecystectomy
D. Anastasiou, S. Barbarisi, L. Culshaw, J. Patel, E. Mazomenos, I. Luengo, D. Stoyanov [ID 84]

Stream-based Active Learning for Surgical AI
G. Just, A. Jenke, A. Kraneis, A. Schulze, M. Wagner, S. Bodenstedt, S. Speidel [ID 86]

Subsampled Randomized Fourier GaLore for Adapting Foundation Models in Depth-Driven Liver Landmark Segmentation
Y. Lin, J. Huang, H. Zhang, S. Kavtaradze, M. J. Clarkson, M. I. Hoque [ID 103]

Local LLMs as Cooperative Agents for Low-Cost Surgical Navigation Support
C. Barr, C. Galvin, A. Azimi, S. Frisken, S. Pieper, G. Fichtinger, A. Golby, P. Mousavi [ID 105]

EchoAgent: Guideline-Centric Reasoning Agent for Echocardiography Measurement and Interpretation
M. Daghyani, L. Wang, N. Hashemi, B. Medhat, B. Abdelsamad, E. R. Velez, X. Li, M. Y. C. Tsang, C. Luong, T. S. M. Tsang, P. Abolmaesumi [ID 106]

Token-Based Fidelity Scoring for Trustworthy Vision Transformer Interpretations in Medical Imaging
U. Ozbulak, S. Kang, W. De Neve, J. Vankerschaver [ID 108]

SurgCheck: Do Vision–Language Models Really Look at Images in Surgical VQA?
J. Shin, K. Y. Kim, E. Cho, S. T. Kim, N. Oh [ID 110]

CRAC-DM: Class Relation-Aware Categorical Diffusion Model for Surgical Scene Segmentation
Y. Zhou, C. Xu, A. Zaid, S. Giannarou [ID 111]

TREAT-Netv2: Regional Wall Motion-Informed Video-Tabular Fusion for ACS Treatment Prediction
D. Kim, V. Wu, M. N. N. To, B. Khodabakhshian, N. Hashemi, S. Abdalla, T. S. M. Tsang, P. Abolmaesumi, C. Luong [ID 167]

11:00-11:30 (1L): Machine Learning for Computer-Assisted Interventions (audience-voted top 3 long presentations)

Chairs: Duygu Sarikaya, Mathias Unberath

11:30-12:30 (1P): Machine Learning for Computer-Assisted Interventions (posters)

13:45-15:00 (2S): Surgical Scene Understanding, Actions, and Multimodal Perception (short oral presentations)

Chairs: Sophia Bano, Shlomi Laufer

Tissue Tracking under Long-Horizon Occlusions with Contrastive Learning
M. Inglezou, N. Kegkeroglou, L. Delimpasis, P. Chatzakos, A. Porichis [ID 8]

Training-free detection and 6D pose estimation of surgical instruments
J. Hein, M. Seibold, L. Calvet, S. Tang, M. Pollefeys, P. Fürnstahl [ID 20]

Grounding Surgical Action Triplets with Instrument Instance Segmentation: A Dataset and Target-Aware Fusion Approach
O. Alabi, M. Wei, C. Budd, T. Vercauteren, M. Shi [ID 27]

Where are they looking in the operating room?
K. Chen, S. Baributsa, L. Schewski, V. Srivastav, D. Mutter, G. Beldi, S. Keller, N. Padoy [ID 34]

Sound Source Localization for Spatial Mapping of Surgical Actions in Dynamic Scenes
J. Hein, L. Vlachopoulos, M. G. L. Olthof, B. Sigrist, P. Fürnstahl, M. Seibold [ID 37]

SurgViVQA: Temporally-Grounded Video Question Answering for Surgical Scene Understanding
M. O. Drago, L. Carlini, P. C. Balyemez, D. Pierantozzi, C. Lena, C. Hassan, D. Stoyanov, E. De Momi, S. Bano, M. I. Hoque [ID 44]

Towards Comprehensive Real-Time Scene Understanding in Ophthalmic Surgery through Multimodal Image Fusion
N. Rohrmoser, G. Ghazaei, M. Sommerperger [ID 47]

HyKey: Hyperspectral Keypoint Detection and Matching in Minimally Invasive Surgery
A. Saikia, C. Di Vece, Z. Mao, S. Bonilla, C. He, J. Ramalhinho, T. Czempiel, S. Bano, D. Stoyanov [ID 59]

Vascular Geometry Characterization for AI-Based Endovascular Navigation
H. Wu, H. Robertshaw, L. Dwyer-Joyce, T. Booth, A. Granados [ID 63]

LumenGSLAM: Online Physically Based Rendering with Gaussian Splatting for Robust Endoscopic Reconstruction and Tracking
F. Leni, C. Lena, Z. Mao, S. Bonilla, L. Carlini, D. Stoyanov, E. De Momi, S. Bano [ID 72]

Towards Controllable Video Synthesis of Routine and Rare OR Events
D. Schneider, L. Seenivasan, S. Rapuri, V. Anil, A. Maksutova, Y. Shen, J. Mangulabnan, H. Ding, J. L. Porras, M. Ishii, M. Unberath [ID 129]

Blob Representation of Robotic Surgical Scenes for Position-Aware Video Generation
C. Katzir, L. Mennillo, D. Anastasiou, D. Stoyanov, E. B. Mazomenos [ID 139]

Streamlining stereo differentiable rendering for marker-free real-time tracking of surgical robots
Y. Hao, M. Huber, C. Bergeles, T. Vercauteren [ID 148]

Deep Learning for Early Detection of Zenker's Diverticulum Based on Swallowing Sound Analysis
D. Ostler-Mildner, A. Jell, M. Seibold, H. Feussner, S. Graf, D. Wilhelm, J. Fuchtmann [ID 156]

Multi-Modal Monocular Endoscopic Depth and Pose Estimation with Edge-Guided Self-Supervision

X. Ju, R. Daher, D. Stoyanov, S. Bano, F. Vasconcelos [ID 168]

15:00-15:30 (2L): Surgical Scene Understanding, Actions, and Multimodal Perception (audience-voted top 3 long presentations)

Chairs: Lena Maier-Hein, Evangelos Mazomenos

16:00-17:00 (2P): Surgical Scene Understanding, Actions, and Multimodal Perception (posters)

Friday, July 3, 2026 Toyoda Auditorium

8:15-9:30 (3S): 3D Reconstruction, SLAM, Registration, and Navigation (short oral presentations)

Chairs: Caroline Essert, Syed Muhammad Anwar

Deep-Motion-Net: GNN-based volumetric organ shape reconstruction from single-view 2D projections
I. Wijesinghe, Z. Taylor, M. Nix, A. Zakeri, A. Hokmabadi, B. Al-Qaisieh, A. Gooya [ID 6]

Self-supervised Monocular Depth Estimation for Colonoscopy using Normal-guided Cross-attention
Y. Zhang, S. Giannarou, D. S. Elson [ID 21]

Endo-PairGS: Pair priors for dynamic endoscopic scene reconstruction
X. Yu, Y. Hayashi, M. Oda, T. Kitasaka, K. Mori [ID 29]

GeoTranMesh: A Geometry-Guided Multi-Branch Mesh Transformer for Liver Segmentation
J. Feng, X. Zhang, S. Farid, S. Ali [ID 45]

Automatic Evaluation of 3D Registration Quality in Surgical Navigation
A. Ribeiro, C. Raposo, T. Baptista, M. Marques, J. Barreto, M. Antunes [ID 81]

Investigating Robot Control Policy Learning for Autonomous X-ray-guided Spine Procedures
F. Klitzner, B. I. Romillo, B. D. Killeen, L. Seenivasan, M. Song, A. Krieger, M. Unberath [ID 96]

BronchOpt: Vision-Based Pose Optimization with Fine-Tuned Foundation Models for Accurate Bronchoscopy Navigation
H. Shu, R. Soberanis-Mukul, J. Xu, H. Ding, M. Ringel, M. Shen, S. I. Sayed, H. Rafii-Tari, M. Unberath [ID 100]

Towards Real-Time Autonomous Navigation: Transformer-Based Catheter Tip Tracking in Fluoroscopy
H. Robertshaw, Y. Hao, W. Deng, B. Jackson, H. Sadati, N. Fischer, T. Vercauteren, A. Granados, T. Booth [ID 112]

Adapting Monocular SLAM for Contactless 3D Registration in Navigated Arthroscopy
T. Baptista, C. Raposo, M. Marques, D. Vaz, M. Antunes, J. P. Barreto [ID 113]

Laparoscopic Liver Point Cloud Registration via Hyperbolic-Topology Interaction
Y. Wang, Y. Dai, X. Yang, B. Huang, R. Xie, G. Mei, F. Jia [ID 114]

Warm-Started Reinforcement Learning for Iterative 3D/2D Liver Registration
H. Zhang, L. He, Z. Cheng, A. Kadkhodamohammadi, D. Stoyanov, B. Davidson, E. Mazomenos, M. Clarkson [ID 141]

PERSEUS: Perception with Semantic Endoscopic Understanding and SLAM
A. Acar, F. Li, S. S. Stern, L. Al-Zogbi, H. Li, K. J. Oguine, D. Isik, B. Burkhart, J. F. d'Almeida, R. J. Webster, I. Oguz, J. Y. Wu [ID 153]

CT-Override: Endoscopic Updates to Preoperative Anatomical Models During Ablative Surgery
J. E. Mangulabnan, J. M. Delgado-López, L. Seenivasan, R. D. Soberanis-Mukul, S. S. Vedula, M. Ishii, R. H. Taylor; G. Hager, M. Unberath [ID 163]

CaViR: Confidence-aware Vision-based Registration for Image-guided Surgery
H. Ishida, Y. Lu, P. Shirazian [ID 164]

Global Region Reidentification for Camera Relocalization in Video-based Surgical Navigation
R. Soberanis-Mukul, R. Chou, C. H. R. Chan, J. E. Mangulabnan, L. Seenivasan, S. B. Ertlmaier, S. Vedula, R. Taylor, M. Ishii, G. Hager, M. Unberath [ID 172]

9:30-10:00 (3L): 3D Reconstruction, SLAM, Registration, and Navigation (audience-voted top 3 long presentations)

Chairs: Yueming Jin, Matthew J. Clarkson

10:30-11:15 (3P): 3D Reconstruction, SLAM, Registration, and Navigation (posters)

11:15-12:30 (4S): Image-Guided Interventions, AR, and Digital Twins (short oral presentations)

Chairs: Qi Dou, Evangelos Mazomenos

TwinOR: Photorealistic Digital Twins of Dynamic Operating Rooms for Embodied AI Research
H. Zhang, Y. Shen, R. Soberanis-Mukul, A. Ghosh, H. Ding, L. Seenivasan, J. Porras, Z. Mao, C. Li, W. Xiao, L. Yarmus, C. Argento, M. Ishii, M. Unberath [ID 19]

A Novel Wearable Interface based on IMUs for Robotic Endoscopy
Q. Yao, C. Zhang, Q. Lin, Y. Qu, C. Zhang, B. Chen, S. Zuo [ID 36]

Ultrasound-Guided Real-Time Spinal Motion Visualization for Spinal Instability Assessment
F. Li, T. Song, Y. Bi, N. Navab, Z. Jiang [ID 48]

Comparative Study of Ultrasound Shape Completion and CBCT-Based AR Workflows for Spinal Needle Interventions
T. Song, F. Li, F. Pabst, M. Gafencu, Y. Bi, U. Eck, N. Navab [ID 49]

ARport: An Augmented Reality System for Image-guided Port Placement Guidance in Robotic Surgery
Z. Han, Z. Yang, Y. Long, L. Zhang, P. Kazanzides, Q. Dou [ID 52]

A clinically and technologically practicable navigation system for robotic sacrocolpopexy
G. Vanni, A. Furiesi, A. Giannini, C. Cappelli, T. Simoncini, V. Ferrari [ID 60]

A Multi-View Pipeline and Benchmark Dataset for 3D Hand Pose Estimation in Surgical Environments
V. Fischer, A. Magdaleno, A. Calek, N. Cavalcanti, N. Hoffman, C. Germann, J. Wüthrich, M. Krähenmann, M. Farshad, P. Fürnstahl, L. Calvet [ID 75]

Personalization of Liver Microwave Ablation Simulation
F. Dettori, I. Nahmed, M. Duprez, J. Verde, P. Alvarez, S. Cotin [ID 79]

A Digital Twin for Microwave Liver Treatment Replanning
I. Nahmed, F. Dettori, J. Verde, M. Duprez, P. Alvarez, S. Cotin [ID 85]

Camera Augmentation: Enabling Uncalibrated Stereo Matching of Minimally-Invasive Surgery Images by Training from the Wealth of Public Synthetic Image Datasets
R. Sharifian, N. Rabbani, Y. Zhang, A. Bartoli [ID 98]

Markerless AR-Guided Robot Alignment for Vertebroplasty Using Gantry-Mounted RGB Imaging
B. Inigo, S. Kim, S. M. Cho, M. Song, H. Zhang, A. Uneri, C. Bailey, A. Krieger, M. Unberath [ID 99]

Markerless 3D Ultrasound Reconstruction for Augmented Reality Assisted Minimally Invasive Spine Surgery
R. Li, Y. Cai, A. Davoodi, G. Borghesan, C. Rodriguez-Guerrero, E. V. Poorten [ID 116]

A Differentiable Digital Twin of the Eye for Patient-Specific Strabismus Surgery Planning
E. Harsigny, P. Alvarez, M. Duprez, S. Cotin [ID 120]

Cobotic Drilling Assistant for Orthopedic Surgery using Gaussian-Process based Breakthrough Detection
L. Gimeno, N. Johnson, T. Stauffer, Q. Lohmeyer, M. Meboldt [ID 126]

Augmented Reality Enhanced Physical Simulation for Femoral Nailing Training
T. Stauffer, B. Gutiez, R. Babst, Q. Lohmeyer, M. Meboldt [ID 140]

13:30-14:00 (4L): Image-Guided Interventions, AR, and Digital Twins (audience-voted top 3 long presentations)

Chairs: Caroline Essert, Emmanuel Vander Poorten

14:00-15:15 (5S): Medical Image Segmentation, Domain Adaptation, and Anatomy-Specific Modeling (short oral presentations)

Chairs: Laura Connolly, Arnaud Huaulmé

Promptable segmentation with region exploration enables minimal-effort expert-level prostate cancer delineation
J. Yang, N. Thorley, A. N. Abbasi, S. Punwani, Z. Tse, Y. Hu, S. Saeed [ID 14]

S4M: 4-points to Segment Anything
A. Meyer, L. Arboit, G. Massimiani, S. Yin, D. Mutter, N. Padoy [ID 32]

Dual Geometry-Inspired Structural Modeling for Neuroendocrine Tumor Segmentation in Endoscopic Ultrasound
H. Suo, L. Chen, Y. Wang, T. Huang, H. Liao, H. Xu, F. Chen [ID 46]

ConVibNet: Needle Detection during Continuous Insertion via Frequency-Inspired Features
J. Guo, Z. Duan, M. Neiiendam, D. Huang, N. Navab, Z. Jiang [ID 61]

Learning from the Unseen: Synthetic Data for Scoliosis AI Segmentation
V. Buchakchiyskiy, S. E. Hadramy, N. Z. Zentai, M. Wehrli, Z. A. Krol, G. Cescato, M. Licci, D. Studer, C. Hasler, P. . Cattin [ID 65]

Lean UNet: A compact model for image segmentation
T. Hassler, I. Åkerholm, M. Nordström, G. Balletti, O. Goksel [ID 94]

Markerless Inside-Out Tool Tracking for Endoscopic Spine Surgery: A Benchmarking Study and Clinical Dataset
P. Zhang, Y. Shen, F. Giraud, N. Cavalcanti, M. Pollefeys, C. Laux, P. Fürnstahl, H. Esfandiari [ID 128]

DefSynUS: Real-time Patient-specific Intrahepatic Vessel Identification via Deformation-Aware CT-US Domain Adaptation
K. Beaudet, Y. Velikova, S. E. Hadramy, N. Navab, P. Cattin, J. Verde, S. Cotin [ID 142]

Imaging Skins: Stretchable Gd2O2S:Tb X-Ray Detectors for Image-Guided Surgery
R. Raffaut, R. Moss, A. Stilli, D. Stoyanov [ID 147]

Markerless Augmented Reality Registration for Surgical Guidance: A Multi-Anatomy Clinical Accuracy Study
Y. Yang, F. Necker, C. Leuze, M. Chen, A. Finegersh, J. Lee, V. Divi, B. Daniel, B. Hargreaves, J. Wu, F. Baik [ID 152]

Optimizing Point-of-Care Ultrasound Video Acquisition for Probabilistic Multi-Task Heart Failure Detection
A. Saadat, N. Hashemi, B. Khodabakhshian, M. Y. Tsang, C. Luong, T. Tsang, P. Abolmaesumi [ID 177]

Point Tracking as a Temporal Cue for Robust Myocardial Segmentation in Echocardiography Videos
B. Khodabakhshian, N. Hashemi, A. Saadat, Z. Gholami, I. Hwang, S. Sojoudi, C. Luong, T. Tsang, P. Abolmaesumi [ID 178]

Imitation Learning for Supervised Autonomous Tumor Resection in Central Airway Obstruction
N. Yilmaz, J. Chen, H. Ding, C. Yu, S. Huang, J. W. Kim, M. Smith, N. Nimmagadda, A. Chara, B. Burkhart, A. Deguet, M. Unberath, A. Krieger [ID 180]

GUIDE-US: Grade-Informed Unpaired Distillation of Encoder Knowledge from Histopathology to Micro-UltraSound
E. Willis, T. Elghareb, P. Wilson, M. N. N. To, M. Abootorabi, A. Jamzad, B. Wodlinger, P. Mousavi, P. Abolmaesumi [ID 181]

Autonomous Skeletal Landmark Localization towards Agentic C-Arm Control
J. H. Jung, A. Arrabi, J. Luo, S. Raymond, S. Wshah [ID 187]

16:00-16:30 (5L): Medical Image Segmentation, Domain Adaptation, and Anatomy-Specific Modeling (audience-voted top 3 long presentations)

Chairs: Stefanie Speidel, M. Ali Nasseri

16:30-17:15 (4P) Image-Guided Interventions, AR, and Digital Twins (posters)

17:15-18:00 (5P) Medical Image Segmentation, Domain Adaptation, and Anatomy-Specific Modeling (posters)

Saturday, July 4, 2026 Toyoda Auditorium

8:15-10:00 (1LA): Long Abstracts Track 1 and Track 2 (short oral presentations)

Chairs: Zhongliang Jiang, Laura Connolly

Surg-NAT+: Negation-Aware Vision-language Refinement for Fine-grained Surgical Understanding
K. Yuan, Y. Cao, Y. Tang, N. Padoy, X. Chu [ID 190]

High-Precision Label-Free Virtual H&E Staining of 3D Holotomography using DAPI-Guided Conditional Diffusion Learning
T. Bak, S. Kim, D. Ahn, H. Min, J. Lee [ID 191]

VR-Based Automated Suturing Skill Assessment in Pediatric Robotic Surgery
S. A. H. Perez, E. Zhao, M. M. Marinho, K. Deie, M. Mitsuishi, K. Harada [ID 192]

6-DoF Dental Pose Estimation for AR-Assisted Craniofacial Surgery
D. Chen, T. Aloni, R. Spektor, S. Tejman-Yarden, T. Yoffe, D. Yogev, S. Laufer [ID 196]

Reinforcement Learning-Based Tension Control of Soft Tissue using a Surgical Assistant Robot
Z. Wang, J. Chen, M. Sogabe, S. Ishihara, E. Kobayashi, N. Tomii [ID 198]

Stretcher: A Learning-Based Framework for Deformation-Robust Keypoint Descriptors
C. von Witzleben, N. Haouchine [ID 199]

Current validation practice undermines surgical AI development
A Reinke, Z. O. Li, M. D. Tizabi, D. Stoyanov, A. Madani, S. Speidel, D. Hashimoto, F. Kolbinger, L. Maier-Hein [ID 201]

BronchoLumen: Real-time bronchial orifice detection in video-bronchoscopy
M. Himstedt, Y. Li [ID 202]

Learning Where To Look: Scaling Parkland Grade Prediction from Surgical Videos
S. Kamabattula, S. Kulason, L. Purvis, B. Mlambo, K. Bhattacharyya [ID 203]

Robust Quantification of ICG Fluorescence Perfusion in Neonatal Bowel Surgery via Deep Point Tracking
Z. Mao, A. Composto, J. Neville, C. Cirelli, D. Stoyanov, S. Giuliani, S. Bano [ID 204]

A Bayesian Approach to Temporal Surgical Segmentation Model Fusion
M. Berniker, S. Kamabattula, K. Bhattacharyya [ID 205]

Claims Reloaded: A toolkit for assessing the validity of outperformance claims
C. A. Maestro, L. Maier-Hein, E. Christodoulou [ID 206]

Depth-Based Local Registration Refinement for Augmented Reality in Pituitary Surgery
A. Enkaoua, M. Villa, J. Ramalhinho, M. Hoque, H. Marcus, M. Clarkson [ID 207]

Real-time 3D Slicing and Embedded System Design for In Situ Bioprinting
N. Balta [ID 209]

Active Learning for Efficient Annotation of Surgical Videos with Weak Supervision
M. Dendukuri, M. Jogan, D. A. Hashimoto, G. Liao [ID 211]

Asymmetrical Five-Plate ArUco-Based Single-Shot Calibration for Laparoscopic Cameras
L. Lobo, D. Crowley, T. Nguyen, R. Shekhar [ID 212]

Computer Assisted Intervention to Improve Diagnostic Yield in Capsule Endoscopy Post Ingestion
U. Goparaju, K. Lawrence, L. Lamb [ID 213]

Mean Alignment: Towards Assessing Mechanical Plausibility of Predicted Displacement Fields
B. Güttner, M. Pfeiffer, S. Speidel [ID 214]

Benchmark of Methods for Surgical Instrument Segmentation in Endoscopic Pituitary Surgery
K. Feeny, A. Wijekoon, W. Wei, D. Khan, D. Stoyanov, H. J. Marcus, S. Bano [ID 216]

Sum-of-Checks: Structured Reasoning for Surgical Safety with Large Vision-Language Models
W. You, C. Goldberg, A. Madani, D. A. Hashimoto, E. Wong [ID 217]

Interdisciplinary Dialogues on Surgical Data Science: Revising its Benefits for Surgical Stakeholders and Patients
A. Huaulmé, M. Bombieri, K. Cleary, S. Giannarou, G. Kronreif, F. Mathis-Ullrich, E. Mazomenos, K. N. Timoh, M. Pfeiffer, M. Zenati, P. Fiorini, P. Jannin [ID 193]

BrachyPlan: A fine-grained efficient dose-guided inverse planning strategy for low-dose-rate brachytherapy
H. Li, J. Liu, H. Shi, W. Huang, Z. Wang, X. Chen [ID 195]

Monocular pose estimation of articulated open surgery tools - in the wild
R. Spektor, T. Friedman, I. Or, G. Bolotin, S. Laufer [ID 197]

Robotic Laser Tissue Soldering for Atraumatic Soft Tissue Fusion Guided by Fluorescent Nanothermometry
O. Cipolato, T. Leuthold, M. Zaech, G. Maennel, D. Kundrat, S. Aegerter, C. Sciascia, A. Jessernig, M. Von Salis, S. Sarcevic, J. Rosendorf, V. Liska, R. Quidant, I. Herrmann [ID 208]

10:30-11:00 Audience Choice Session

11:00-12:00 (1LA P) Long Abstract Track 1 and Track 2 (posters)

12:00-12:30 IPCAI Awards and Closing

First International Workshop on In-body Cybernetic Avatar (WS-IBCA)

Chairs: Fumihito Arai, PhD (JP)

Saturday, July 4, 2026 Conf Room #1

13:30-15:30 Medical Innovations Utilizing Cutting-edge In-body Technologies

Chairs: Fumihito Arai, PhD (JP)

(invited) Medical Innovations Utilizing Cutting-edge In-body Technologies(
Lin Feng, Beihang Univversity (CN)

Grand Challenge on Cybernetic Avatars within the Body
Fumihito Arai, The University of Tokyo (JP)

A Stomach-Acid-Charged Fully-Integrated Tablet-Type Digital Pill with In-Body Monitoring Capability
Kiichi Niitsu, Kyoto University (JP)

Novel Biomaterials for the Treatment of Gastrointestinal Diseases
Taichi Ito, The University of Tokyo (JP)

Time and Space Information Reconstruction from In-body CA data
Kensaku Mori, Nagoya University (JP)

Toward Next Generation Colonoscopy Interfaces Through AI Robotics and Haptic Guidance(tentative)
Tadayoshi Aoyama, Nagoya University (JP)

Magnetically Driven Micro/Nanorobots for Drug Delivery in Tumor Therapy and Thrombus Removal
Feng Lin, Beihang University (CN)

First International Workshop on Women Imaging (WS-WI)

Chairs: Mami Iima, MD (JP), Shandong Wu, PhD (US)

Sunday, July 5, 2026 Symposion Hall

08:30-10:30 Expert Forum: Frontiers on AI in Breast/Women's Imaging

Chairs: Mami Iima, MD (JP), Shandong Wu, PhD (US)

(invited) Unlocking Virtual Contrast Enhancement in Breast MRI through Deep Learning
Julia Schnabel, TUM (DE)

Non-contrast MRI and AI-Aided Systems for Breast Lesion Detection and Classification
Mami Iima, Nagoya University (JP)

(invited) From Evidence to Implementation: How I Want to Use AI in Mammography Screening
Satoko Fox, St. Marianna University School of Medicine (JP)

Multimodal AI for Breast Cancer Care: From Screening to Treatment
Shandong Wu, University of Pittsburgh (US)

First Joint Workshop of CARS / ISCAS / JAMIT / JSCAS (WS-JOINT)

Chairs: Kensaku Mori, PhD (JP), Masahiro Oda, PhD (JP), Yoshito Mekada, PhD (JP)

Sunday, July 5, 2026 Symposion

16:00-18:00 Trustworthy AI

Chairs: Kensaku Mori, PhD (JP), Masahiro Oda, PhD (JP), Yoshito Mekada, PhD (JP)

(Invited) AI and Future Medicine
Daniel Rueckart

(Invited) TBA
Kevin Cleary

(Invited) TBA
Miguel A. González Ballester

Special workshop of Trustworthy AI in CARS

Chairs: Kensaku Mori, PhD (JP), Seiji Yamada, PhD (JP)

Sunday, July 5, 2026 Conference Room 1

11:00-12:30 AI Trust in computer-assisted radiology and surgery

Chairs: Kensaku Mori, PhD (JP), Seiji Yamada, PhD (JP)

Concept of Trust Calibration in Human-Agent Interaction (TBA)
Seiji Yamada (JP)

Uncertainty-aware Computer Assisted Intervention
Kensaku Mori (JP)

Trust-level calibration for computer-aided diagnosis
Takeshi Hara (JP)

Uncertainty-based robotic assistance for microscopic procedure
Tadayoshi Aoyama (JP)