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Medical Image Computing and Computer Assisted Intervention – MICCAI 2020

23rd International Conference
Lima, Peru, October 4–8, 2020
Proceedings, Part III

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Preface

The 23rd International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2020) was held this year under the most unusual circumstances, due to the COVID-19 pandemic disrupting our lives in ways that were unimaginable at the start of the new decade. MICCAI 2020 was scheduled to be held in Lima, Peru, and would have been the first MICCAI meeting in Latin America. However, with the pandemic, the conference and its program had to be redesigned to deal with realities of the “new normal”, where virtual presence rather than physical interactions among attendees, was necessary to comply with global transmission control measures. The conference was held through a virtual conference management platform, consisting of the main scientific program in addition to featuring 25 workshops, 8 tutorials, and 24 challenges during October 4–8, 2020. In order to keep a part of the original spirit of MICCAI 2020, SIPAIM 2020 was held as an adjacent LatAm conference dedicated to medical information management and imaging, held during October 3–4, 2020.

The proceedings of MICCAI 2020 showcase papers contributed by the authors to the main conference, which are organized in seven volumes of *Lecture Notes in Computer Science* (LNCS) books. These papers were selected after a thorough double-blind peer-review process. We followed the example set by past MICCAI meetings, using Microsoft’s Conference Managing Toolkit (CMT) for paper submission and peer reviews, with support from the Toronto Paper Matching System (TPMS) to partially automate paper assignment to area chairs and reviewers.

The conference submission deadline had to be extended by two weeks to account for the disruption COVID-19 caused on the worldwide scientific community. From 2,953 original intentions to submit, 1,876 full submissions were received, which were reduced to 1,809 submissions following an initial quality check by the program chairs. Of those, 61% were self-declared by authors as Medical Image Computing (MIC), 6% as Computer Assisted Intervention (CAI), and 32% as both MIC and CAI. Following a broad call to the community for self-nomination of volunteers and a thorough review by the program chairs, considering criteria such as balance across research areas, geographical distribution, and gender, the MICCAI 2020 Program Committee comprised 82 area chairs, with 46% from North America, 28% from Europe, 19% from Asia/Pacific/Middle East, 4% from Latin America, and 1% from Australia. We invested significant effort in recruiting more women to the Program Committee, following the conference’s emphasis on equity, inclusion, and diversity. This resulted in 26% female area chairs. Each area chair was assigned about 23 manuscripts, with suggested potential reviewers using TPMS scoring and self-declared research areas, while domain conflicts were automatically considered by CMT. Following a final revision and prioritization of reviewers by area chairs in terms of their expertise related to each paper,

over 1,426 invited reviewers were asked to bid for the papers for which they had been suggested. Final reviewer allocations via CMT took account of reviewer bidding, prioritization of area chairs, and TPMS scores, leading to allocating about 4 papers per reviewer. Following an initial double-blind review phase by reviewers, area chairs provided a meta-review summarizing key points of reviews and a recommendation for each paper. The program chairs then evaluated the reviews and their scores, along with the recommendation from the area chairs, to directly accept 241 papers (13%) and reject 828 papers (46%); the remainder of the papers were sent for rebuttal by the authors. During the rebuttal phase, two additional area chairs were assigned to each paper using the CMT and TPMS scores while accounting for domain conflicts. The three area chairs then independently scored each paper to accept or reject, based on the reviews, rebuttal, and manuscript, resulting in clear paper decisions using majority voting. This process resulted in the acceptance of a further 301 papers for an overall acceptance rate of 30%. A virtual Program Committee meeting was held on July 10, 2020, to confirm the final results and collect feedback of the peer-review process.

For the MICCAI 2020 proceedings, 542 accepted papers have been organized into seven volumes as follows:

- Part I, LNCS Volume 12261: Machine Learning Methodologies
- Part II, LNCS Volume 12262: Image Reconstruction and Machine Learning
- Part III, LNCS Volume 12263: Computer Aided Intervention, Ultrasound and Image Registration
- Part IV, LNCS Volume 12264: Segmentation and Shape Analysis
- Part V, LNCS Volume 12265: Biological, Optical and Microscopic Image Analysis
- Part VI, LNCS Volume 12266: Clinical Applications
- Part VII, LNCS Volume 12267: Neurological Imaging and PET

For the main conference, the traditional emphasis on poster presentations was maintained; each author uploaded a brief pre-recorded presentation and a graphical abstract onto a web platform and was allocated a personal virtual live session in which they talked directly to the attendees. It was also possible to post questions online allowing asynchronous conversations – essential to overcome the challenges of a global conference spanning many time zones. The traditional oral sessions, which typically included a small proportion of the papers, were replaced with 90 “mini” sessions where all of the authors were clustered into groups of 5 to 7 related papers; a live virtual session allowed the authors and attendees to discuss the papers in a panel format.

We would like to sincerely thank everyone who contributed to the success of MICCAI 2020 and the quality of its proceedings under the most unusual circumstances of a global pandemic. First and foremost, we thank all authors for submitting and presenting their high-quality work that made MICCAI 2020 a greatly enjoyable and successful scientific meeting. We are also especially grateful to all members of the Program Committee and reviewers for their dedicated effort and insightful feedback throughout the entire paper selection process. We would like to particularly thank the MICCAI society for support, insightful comments, and continuous engagement with organizing the conference. Special thanks go to Kitty Wong, who oversaw the entire

process of paper submission, reviews, and preparation of conference proceedings. Without her, we would have not functioned effectively. Given the “new normal”, none of the workshops, tutorials, and challenges would have been feasible without the true leadership of the satellite events organizing team led by Mauricio Reyes: Erik Meijering (workshops), Carlos Alberola-López (tutorials), and Lena Maier-Hein (challenges). Behind the scenes, MICCAI secretarial personnel, Janette Wallace and Johanne Langford, kept a close eye on logistics and budgets, while Mehmet Eldegez and his team at Dekon Congress and Tourism led the professional conference organization, working tightly with the virtual platform team. We also thank our sponsors for financial support and engagement with conference attendees through the virtual platform. Special thanks goes to Veronika Cheplygina for continuous engagement with various social media platforms before and throughout the conference to publicize the conference. We would also like to express our gratitude to Shelley Wallace for helping us in Marketing MICCAI 2020, especially during the last phase of the virtual conference organization.

The selection process for Young Investigator Awards was managed by a team of senior MICCAI investigators, led by Julia Schnabel. In addition, MICCAI 2020 offered free registration to the top 50 ranked papers at the conference whose primary authors were students. Priority was given to low-income regions and Latin American students. Further support was provided by the National Institutes of Health (support granted for MICCAI 2020) and the National Science Foundation (support granted to MICCAI 2019 and continued for MICCAI 2020) which sponsored another 52 awards for USA-based students to attend the conference. We would like to thank Marius Linguraru and Antonion Porras, for their leadership in regards to the NIH sponsorship for 2020, and Dinggang Shen and Tianming Liu, MICCAI 2019 general chairs, for keeping an active bridge and engagement with MICCAI 2020.

Marius Linguraru and Antonion Porras were also leading the young investigators early career development program, including a very active mentorship which we do hope, will significantly catalize young and brilliant careers of future leaders of our scientific community. In link with SIPAIM (thanks to Jorge Brieva, Marius Linguraru, and Natasha Lepore for their support), we also initiated a Startup Village initiative, which, we hope, will be able to bring in promising private initiatives in the areas of MICCAI. As a part of SIPAIM 2020, we note also the presence of a workshop for Peruvian clinicians. We would like to thank Benjamín Castañeda and Renato Gandolfi for this initiative.

MICCAI 2020 invested significant efforts to tightly engage the industry stakeholders in our field throughout its planning and organization. These efforts were led by Parvin Mousavi, and ensured that all sponsoring industry partners could connect with the conference attendees through the conference’s virtual platform before and during the meeting. We would like to thank the sponsorship team and the contributions

of Gustavo Carneiro, Benjamín Castañeda, Ignacio Larrabide, Marius Linguraru, Yanwu Xu, and Kevin Zhou.

We look forward to seeing you at MICCAI 2021.

October 2020

Anne L. Martel
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Feng Liu
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Jianfei Liu
Jin Liu
Jingya Liu
Jingyu Liu
Kai Liu
Kefei Liu
Lihao Liu
Luyan Liu
Mengting Liu
Na Liu
Peng Liu
Ping Liu
Quande Liu
Qun Liu
Shengfeng Liu
Shuangjun Liu
Sidong Liu
Siqi Liu
Siyuan Liu
Tianrui Liu
Xianglong Liu
Xinyang Liu
Yan Liu
Yuan Liu
Yuhang Liu
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Herve Lombaert
Marco Lorenzi
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Nicolas Loy Rodas
Allen Lu
Donghuan Lu
Huanxiang Lu
Jiwen Lu
Le Lu
Weijia Lu
Xiankai Lu
Yao Lu

Yongyi Lu
Yueh-Hsun Lu
Christian Lucas
Oeslle Lucena
Imanol Luengo
Ronald Lui
Gongning Luo
Jie Luo
Ma Luo
Marcel Luthi
Khoa Luu
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Jinglei Lv
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Andy J. Ma
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Da Ma
Hua Ma
Jingting Ma
Kai Ma
Lei Ma
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Mohammed Mahmoud
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 Mohammad Hamed Mozaffari
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 Henning Müller
 Balamurali Murugesan
 Cosmas Mwikirize
 Andriy Myronenko
 Saad Nadeem
 Ahmed Naglah
 Vivek Natarajan
 Vishwesh Nath
 Rodrigo Nava
 Fernando Navarro
 Lydia Neary-Zajiczek
 Peter Neher
 Dominik Neumann
 Gia Ngo
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 Jingxin Nie
 Weizhi Nie
 Aditya Nigam
 Xia Ning
 Zhenyuan Ning
 Sijie Niu
 Tianye Niu
 Alexey Novikov
 Jorge Novo
 Chinedu Nwoye
 Mohammad Obeid
 Masahiro Oda
 Thomas O'Donnell
 Benjamin Odry
 Steffen Oeltze-Jafra
 Ayşe Oktay
 Hugo Oliveira
 Marcelo Oliveira
 Sara Oliveira
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 Sahin Olut
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Wenjian Qin
Yanguo Qin
Wu Qiu
Hui Qu
Kha Gia Quach
Prashanth R.
Pradeep Reddy Raamana
Jagath Rajapakse
Kashif Rajpoot
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Parnesh Raniga
Nagulan Ratnarajah
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Daniele Ravi
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Yinhao Ren
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Hongkai Wang
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Huan Wang
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Jiong Zhang
Jun Zhang
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Lin Zhang
Ling Zhang
Lu Zhang
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Ning Zhang
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Pengyue Zhang
Qiang Zhang
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Kang Zheng	Reyer Zwiggelaar

Contents – Part III

CAI Applications

Reconstructing Sinus Anatomy from Endoscopic Video – Towards a Radiation-Free Approach for Quantitative Longitudinal Assessment	3
<i>Xingtong Liu, Maia Stiber, Jindan Huang, Masaru Ishii, Gregory D. Hager, Russell H. Taylor, and Mathias Unberath</i>	
Inertial Measurements for Motion Compensation in Weight-Bearing Cone-Beam CT of the Knee	14
<i>Jennifer Maier, Marlies Nitschke, Jang-Hwan Choi, Garry Gold, Rebecca Fahrig, Bjoern M. Eskofier, and Andreas Maier</i>	
Feasibility Check: Can Audio Be a Simple Alternative to Force-Based Feedback for Needle Guidance?	24
<i>Alfredo Illanes, Axel Boese, Michael Friebe, and Christian Hansen</i>	
A Graph-Based Method for Optimal Active Electrode Selection in Cochlear Implants	34
<i>Erin Bratu, Robert Dwyer, and Jack Noble</i>	
Improved Resection Margins in Surgical Oncology Using Intraoperative Mass Spectrometry	44
<i>Amoon Jamzad, Alireza Sedghi, Alice M. L. Santilli, Natasja N. Y. Janssen, Martin Kaufmann, Kevin Y. M. Ren, Kaitlin Vanderbeck, Ami Wang, Doug McKay, John F. Rudan, Gabor Fichtinger, and Parvin Mousavi</i>	
Self-Supervised Domain Adaptation for Patient-Specific, Real-Time Tissue Tracking	54
<i>Sontje Ihler, Felix Kuhnke, Max-Heinrich Laves, and Tobias Ortmaier</i>	
An Interactive Mixed Reality Platform for Bedside Surgical Procedures	65
<i>Ehsan Azimi, Zhiyuan Niu, Maia Stiber, Nicholas Greene, Ruby Liu, Camilo Molina, Judy Huang, Chien-Ming Huang, and Peter Kazanzides</i>	
Ear Cartilage Inference for Reconstructive Surgery with Convolutional Mesh Autoencoders	76
<i>Eimear O’ Sullivan, Lara van de Lande, Antonia Osolos, Silvia Schievano, David J. Dunaway, Neil Bulstrode, and Stefanos Zafeiriou</i>	

Robust Multi-modal 3D Patient Body Modeling	86
<i>Fan Yang, Ren Li, Georgios Georgakis, Srikrishna Karanam, Terrence Chen, Haibin Ling, and Ziyang Wu</i>	
A New Electromagnetic-Video Endoscope Tracking Method via Anatomical Constraints and Historically Observed Differential Evolution	96
<i>Xiongbiao Luo</i>	
Malocclusion Treatment Planning via PointNet Based Spatial Transformation Network	105
<i>Xiaoshuang Li, Lei Bi, Jinman Kim, Tingyao Li, Peng Li, Ye Tian, Bin Sheng, and Dagan Feng</i>	
Simulation of Brain Resection for Cavity Segmentation Using Self- supervised and Semi-supervised Learning.	115
<i>Fernando Pérez-García, Roman Rodionov, Ali Alim-Marvasti, Rachel Sparks, John S. Duncan, and Sébastien Ourselin</i>	
Local Contractive Registration for Quantification of Tissue Shrinkage in Assessment of Microwave Ablation.	126
<i>Dingkun Liu, Tianyu Fu, Danni Ai, Jingfan Fan, Hong Song, and Jian Yang</i>	
Reinforcement Learning of Musculoskeletal Control from Functional Simulations.	135
<i>Emanuel Joos, Fabien Péan, and Orcun Goksel</i>	
Image Registration	
MvMM-RegNet: A New Image Registration Framework Based on Multivariate Mixture Model and Neural Network Estimation	149
<i>Xinzhe Luo and Xiahai Zhuang</i>	
Database Annotation with Few Examples: An Atlas-Based Framework Using Diffeomorphic Registration of 3D Trees	160
<i>Pierre-Louis Antonsanti, Thomas Benseghir, Vincent Jugnon, and Joan Glaunès</i>	
Pair-Wise and Group-Wise Deformation Consistency in Deep Registration Network.	171
<i>Dongdong Gu, Xiaohuan Cao, Shanshan Ma, Lei Chen, Guocai Liu, Dinggang Shen, and Zhong Xue</i>	
Semantic Hierarchy Guided Registration Networks for Intra-subject Pulmonary CT Image Alignment.	181
<i>Liyun Chen, Xiaohuan Cao, Lei Chen, Yaozong Gao, Dinggang Shen, Qian Wang, and Zhong Xue</i>	

Highly Accurate and Memory Efficient Unsupervised Learning-Based Discrete CT Registration Using 2.5D Displacement Search.	190
<i>Mattias P. Heinrich and Lasse Hansen</i>	
Unsupervised Learning Model for Registration of Multi-phase Ultra-Widefield Fluorescein Angiography.	201
<i>Gyoeng Min Lee, Kwang Deok Seo, Hye Ju Song, Dong Geun Park, Ga Hyung Ryu, Min Sagong, and Sang Hyun Park</i>	
Large Deformation Diffeomorphic Image Registration with Laplacian Pyramid Networks.	211
<i>Tony C. W. Mok and Albert C. S. Chung</i>	
Adversarial Uni- and Multi-modal Stream Networks for Multimodal Image Registration	222
<i>Zhe Xu, Jie Luo, Jiangpeng Yan, Ritvik Pulya, Xiu Li, William Wells III, and Jayender Jagadeesan</i>	
Cross-Modality Multi-atlas Segmentation Using Deep Neural Networks.	233
<i>Wangbin Ding, Lei Li, Xiahai Zhuang, and Liqin Huang</i>	
Longitudinal Image Registration with Temporal-Order and Subject-Specificity Discrimination.	243
<i>Qianye Yang, Yunguan Fu, Francesco Giganti, Nooshin Ghavami, Qingchao Chen, J. Alison Noble, Tom Vercauteren, Dean Barratt, and Yipeng Hu</i>	
Flexible Bayesian Modelling for Nonlinear Image Registration	253
<i>Mikael Brudfors, Yaël Balbastre, Guillaume Flandin, Parashkev Nachev, and John Ashburner</i>	
Are Registration Uncertainty and Error Monotonically Associated?	264
<i>Jie Luo, Sarah Frisken, Duo Wang, Alexandra Golby, Masashi Sugiyama, and William Wells III</i>	
MR-to-US Registration Using Multiclass Segmentation of Hepatic Vasculature with a Reduced 3D U-Net	275
<i>Bart R. Thomson, Jasper N. Smit, Oleksandra V. Ivashchenko, Niels F. M. Kok, Koert F. D. Kuhlmann, Theo J. M. Ruers, and Matteo Fusaglia</i>	
Detecting Pancreatic Ductal Adenocarcinoma in Multi-phase CT Scans via Alignment Ensemble	285
<i>Yingda Xia, Qihang Yu, Wei Shen, Yuyin Zhou, Elliot K. Fishman, and Alan L. Yuille</i>	

Biomechanics-Informed Neural Networks for Myocardial Motion Tracking in MRI	296
<i>Chen Qin, Shuo Wang, Chen Chen, Huaqi Qiu, Wenjia Bai, and Daniel Rueckert</i>	
Fluid Registration Between Lung CT and Stationary Chest Tomosynthesis Images	307
<i>Lin Tian, Connor Puett, Peirong Liu, Zhengyang Shen, Stephen R. Aylward, Yueh Z. Lee, and Marc Niethammer</i>	
Anatomical Data Augmentation via Fluid-Based Image Registration	318
<i>Zhengyang Shen, Zhenlin Xu, Sahin Olut, and Marc Niethammer</i>	
Generalizing Spatial Transformers to Projective Geometry with Applications to 2D/3D Registration	329
<i>Cong Gao, Xingtong Liu, Wenhao Gu, Benjamin Killeen, Mehran Armand, Russell Taylor, and Mathias Unberath</i>	
Instrumentation and Surgical Phase Detection	
TeCNO: Surgical Phase Recognition with Multi-stage Temporal Convolutional Networks	343
<i>Tobias Czempiel, Magdalini Paschali, Matthias Keicher, Walter Simson, Hubertus Feussner, Seong Tae Kim, and Nassir Navab</i>	
Surgical Video Motion Magnification with Suppression of Instrument Artefacts	353
<i>Mirek Janatka, Hani J. Marcus, Neil L. Dorward, and Danail Stoyanov</i>	
Recognition of Instrument-Tissue Interactions in Endoscopic Videos via Action Triplets	364
<i>Chinedu Innocent Nwoye, Cristians Gonzalez, Tong Yu, Pietro Mascagni, Didier Mutter, Jacques Marescaux, and Nicolas Padoy</i>	
AutoSNAP: Automatically Learning Neural Architectures for Instrument Pose Estimation	375
<i>David Kügler, Marc Uecker, Arjan Kuijper, and Anirban Mukhopadhyay</i>	
Automatic Operating Room Surgical Activity Recognition for Robot-Assisted Surgery	385
<i>Aidean Sharghi, Helene Haugerud, Daniel Oh, and Omid Mohareri</i>	

Navigation and Visualization

Can a Hand-Held Navigation Device Reduce Cognitive Load? A User-Centered Approach Evaluated by 18 Surgeons	399
<i>Caroline Brendle, Laura Schütz, Javier Esteban, Sandro M. Krieg, Ulrich Eck, and Nassir Navab</i>	
Symmetric Dilated Convolution for Surgical Gesture Recognition	409
<i>Jinglu Zhang, Yinyu Nie, Yao Lyu, Hailin Li, Jian Chang, Xiaosong Yang, and Jian Jun Zhang</i>	
Deep Selection: A Fully Supervised Camera Selection Network for Surgery Recordings	419
<i>Ryo Hachiuma, Tomohiro Shimizu, Hideo Saito, Hiroki Kajita, and Yoshifumi Takatsume</i>	
Interacting with Medical Volume Data in Projective Augmented Reality	429
<i>Florian Heinrich, Kai Bornemann, Kai Lawonn, and Christian Hansen</i>	
VR Simulation of Novel Hands-Free Interaction Concepts for Surgical Robotic Visualization Systems	440
<i>Fang You, Rutvik Khakhar, Thomas Picht, and David Dobbelsstein</i>	
Spatially-Aware Displays for Computer Assisted Interventions	451
<i>Alexander Winkler, Ulrich Eck, and Nassir Navab</i>	

Ultrasound Imaging

Sensorless Freehand 3D Ultrasound Reconstruction via Deep Contextual Learning	463
<i>Hengtao Guo, Sheng Xu, Bradford Wood, and Pingkun Yan</i>	
Ultra2Speech - A Deep Learning Framework for Formant Frequency Estimation and Tracking from Ultrasound Tongue Images	473
<i>Pramit Saha, Yadong Liu, Bryan Gick, and Sidney Fels</i>	
Ultrasound Video Summarization Using Deep Reinforcement Learning	483
<i>Tianrui Liu, Qingjie Meng, Athanasios Vlontzos, Jeremy Tan, Daniel Rueckert, and Bernhard Kainz</i>	
Predicting Obstructive Hydronephrosis Based on Ultrasound Alone	493
<i>Lauren Erdman, Marta Skreta, Mandy Rickard, Carson McLean, Aziz Mezlini, Daniel T. Keefe, Anne-Sophie Blais, Michael Brudno, Armando Lorenzo, and Anna Goldenberg</i>	
Semi-supervised Training of Optical Flow Convolutional Neural Networks in Ultrasound Elastography	504
<i>Ali K. Z. Tehrani, Morteza Mirzaei, and Hassan Rivaz</i>	

Three-Dimensional Thyroid Assessment from Untracked 2D Ultrasound Clips	514
<i>Wolfgang Wein, Mattia Lupetti, Oliver Zettinig, Simon Jagoda, Mehrdad Salehi, Viktoria Markova, Dornoosh Zonoobi, and Raphael Prevost</i>	
Complex Cancer Detector: Complex Neural Networks on Non-stationary Time Series for Guiding Systematic Prostate Biopsy	524
<i>Golara Javadi, Minh Nguyen Nhat To, Samareh Samadi, Sharareh Bayat, Samira Sojoudi, Antonio Hurtado, Silvia Chang, Peter Black, Parvin Mousavi, and Purang Abolmaesumi</i>	
Self-Supervised Contrastive Video-Speech Representation Learning for Ultrasound	534
<i>Jianbo Jiao, Yifan Cai, Mohammad Alsharid, Lior Drukker, Aris T. Papageorghiou, and J. Alison Noble</i>	
Assisted Probe Positioning for Ultrasound Guided Radiotherapy Using Image Sequence Classification	544
<i>Alex Grimwood, Helen McNair, Yipeng Hu, Ester Bonmati, Dean Barratt, and Emma J. Harris</i>	
Searching Collaborative Agents for Multi-plane Localization in 3D Ultrasound	553
<i>Yuhao Huang, Xin Yang, Rui Li, Jikuan Qian, Xiaoqiong Huang, Wenlong Shi, Haoran Dou, Chaoyu Chen, Yuanji Zhang, Huanjia Luo, Alejandro Frangi, Yi Xiong, and Dong Ni</i>	
Contrastive Rendering for Ultrasound Image Segmentation.	563
<i>Haoming Li, Xin Yang, Jiamin Liang, Wenlong Shi, Chaoyu Chen, Haoran Dou, Rui Li, Rui Gao, Guangquan Zhou, Jinghui Fang, Xiaowen Liang, Ruobing Huang, Alejandro Frangi, Zhiyi Chen, and Dong Ni</i>	
An Unsupervised Approach to Ultrasound Elastography with End-to-end Strain Regularisation	573
<i>Rémi Delaunay, Yipeng Hu, and Tom Vercauteren</i>	
Automatic Probe Movement Guidance for Freehand Obstetric Ultrasound . . .	583
<i>Richard Droste, Lior Drukker, Aris T. Papageorghiou, and J. Alison Noble</i>	
Video Image Analysis	
ISINet: An Instance-Based Approach for Surgical Instrument Segmentation	595
<i>Cristina González, Laura Bravo-Sánchez, and Pablo Arbelaez</i>	

Reliable Liver Fibrosis Assessment from Ultrasound Using Global Hetero-Image Fusion and View-Specific Parameterization	606
<i>Bowen Li, Ke Yan, Dar-In Tai, Yuankai Huo, Le Lu, Jing Xiao, and Adam P. Harrison</i>	
Toward Rapid Stroke Diagnosis with Multimodal Deep Learning	616
<i>Mingli Yu, Tongan Cai, Xiaolei Huang, Kelvin Wong, John Volpi, James Z. Wang, and Stephen T. C. Wong</i>	
Learning and Reasoning with the Graph Structure Representation in Robotic Surgery	627
<i>Mobarakol Islam, Lalithkumar Seenivasan, Lim Chwee Ming, and Hongliang Ren</i>	
Vision-Based Estimation of MDS–UPDRS Gait Scores for Assessing Parkinson’s Disease Motor Severity.	637
<i>Mandy Lu, Kathleen Poston, Adolf Pfefferbaum, Edith V. Sullivan, Li Fei-Fei, Kilian M. Pohl, Juan Carlos Niebles, and Ehsan Adeli</i>	
Searching for Efficient Architecture for Instrument Segmentation in Robotic Surgery	648
<i>Daniil Pakhomov and Nassir Navab</i>	
Unsupervised Surgical Instrument Segmentation via Anchor Generation and Semantic Diffusion	657
<i>Daochang Liu, Yuhui Wei, Tingting Jiang, Yizhou Wang, Rulin Miao, Fei Shan, and Ziyu Li</i>	
Towards Accurate and Interpretable Surgical Skill Assessment: A Video-Based Method Incorporating Recognized Surgical Gestures and Skill Levels	668
<i>Tianyu Wang, Yijie Wang, and Mian Li</i>	
Learning Motion Flows for Semi-supervised Instrument Segmentation from Robotic Surgical Video	679
<i>Zixu Zhao, Yueming Jin, Xiaojie Gao, Qi Dou, and Pheng-Ann Heng</i>	
Spectral-spatial Recurrent-Convolutional Networks for <i>In-Vivo</i> Hyperspectral Tumor Type Classification	690
<i>Marcel Bengs, Nils Gessert, Wiebke Laffers, Dennis Eggert, Stephan Westermann, Nina A. Mueller, Andreas O. H. Gerstner, Christian Betz, and Alexander Schlaefer</i>	
Synthetic and Real Inputs for Tool Segmentation in Robotic Surgery	700
<i>Emanuele Colleoni, Philip Edwards, and Danail Stoyanov</i>	

Perfusion Quantification from Endoscopic Videos: Learning to Read Tumor Signatures	711
<i>Sergiy Zhuk, Jonathan P. Epperlein, Rahul Nair, Seshu Tirupathi, Pól Mac Aonghusa, Donal F. O'Shea, and Ronan Cahill</i>	
Asynchronous in Parallel Detection and Tracking (AIPDT): Real-Time Robust Polyp Detection	722
<i>Zijian Zhang, Hong Shang, Han Zheng, Xiaoning Wang, Jiajun Wang, Zhongqian Sun, Junzhou Huang, and Jianhua Yao</i>	
OfGAN: Realistic Rendition of Synthetic Colonoscopy Videos	732
<i>Jiabo Xu, Saeed Anwar, Nick Barnes, Florian Grimpen, Olivier Salvado, Stuart Anderson, and Mohammad Ali Armin</i>	
Two-Stream Deep Feature Modelling for Automated Video Endoscopy Data Analysis	742
<i>Harshala Gammulle, Simon Denman, Sridha Sridharan, and Clinton Fookes</i>	
Rethinking Anticipation Tasks: Uncertainty-Aware Anticipation of Sparse Surgical Instrument Usage for Context-Aware Assistance	752
<i>Dominik Rivoir, Sebastian Bodenstedt, Isabel Funke, Felix von Bechtolsheim, Marius Distler, Jürgen Weitz, and Stefanie Speidel</i>	
Deep Placental Vessel Segmentation for Fetoscopic Mosaicking	763
<i>Sophia Bano, Francisco Vasconcelos, Luke M. Shepherd, Emmanuel Vander Poorten, Tom Vercauteren, Sebastien Ourselin, Anna L. David, Jan Deprest, and Danail Stoyanov</i>	
Deep Multi-view Stereo for Dense 3D Reconstruction from Monocular Endoscopic Video	774
<i>Gwangbin Bae, Ignas Budvytis, Chung-Kwong Yeung, and Roberto Cipolla</i>	
Endo-Sim2Real: Consistency Learning-Based Domain Adaptation for Instrument Segmentation	784
<i>Manish Sahu, Ronja Strömsdörfer, Anirban Mukhopadhyay, and Stefan Zachow</i>	
Author Index	795