



David Geffen
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UCLA Health

Department of Radiation Oncology

Schedule of Presentations

American Association of
Physicists in Medicine

AAPM 2019 JUL 14-18



61st Annual Meeting

July 14 - 18, 2019

Henry B. Gonzalez Convention Center
900 E. Market Street
San Antonio, Texas

UCLA Health www.uclahealth.org/radonc

Radiation Oncology

Sunday, July 14, 2019

Multi-Disciplinary General ePoster Discussion
3:30 PM - 4:00 PM Exhibit Hall | Forum 5
4DCT and 4DCBCT
[Evaluating a Model-Based 4DCT Technique for Managing Respiration-Induced Motion of Abdominal Tumors](#)
D O'Connell*, M Lauria, J Lewis, A Santhanam, A Raldow, P Lee, D Low

4:00 PM - 5:00 PM Exhibit Hall | Forum 2
Radiomics
[A Genomic Signature Classifier to Predict Locoregional Failure of Head-And-Neck Cancer](#)
X Pan*, H Yu, Y Yuan, J Huang, L Chen, X Qi

2:00 PM - 3:00 PM Room: 302
Novel Dosimetry and Calibration Methods - Therapy SNAP Oral
2:21 PM [Robust Individual Thermoluminescence Dosimeter Tracking Using Optical Fingerprinting](#)
D Shang*, W Gu, V Yu, S Tenn, K Sheng

4:00 PM - 5:00 PM Room 221AB
Deformable Image Registration and ART - Multi-Disciplinary SNAP Oral
4:07 PM [On the Quantitative Analysis of Biomechanical Lung Model Consistency Using 5DCT Datasets](#)
B Stiehl*, M Lauria, D O'Connell, K Hasse, I Barjaktarevic, P Lee, D Low, A Santhanam

4:00 PM - 5:00 PM Room: 302
External Beam Planning - Therapy SNAP Oral
4:35 PM [U-Net Based Dose Distribution Prediction for Pancreatic SBRT Patients](#)
Y Lao*, Z Fan, K Sheng, A Shiu, E Chang, R Tuli, W Yang

4:00 PM - 5:00 PM Room: Stars at Night Ballroom 2-3
MRI in RT - Multi-Disciplinary SNAP Oral
4:14 PM [Performance Comparison of Conditional and Cycle-Consistent Generative Adversarial Networks Used for Abdominal Synthetic CT Generation](#)
J Fu*, K Singhrao, M Cao, Y Yang, D Ruan, J Lewis

4:21 PM [Shape Constrained Fully Convolutional DenseNet with Adversarial Training for Multi-Organ Segmentation On Head and Neck Low Field MR Images](#)
N Tong*, S Gou, K Sheng, M Cao

5:00 PM - 6:00 PM Room: Stars at Night Ballroom 2-3
MR-guided Radiation Therapy - Multi-Disciplinary SNAP Oral
Moderator: M Cao
5:35 PM [Motion Prediction Confidence Estimation for MRI-Guided Radiotherapy](#)
J Ginn*, D Low, J Lamb, D Ruan

Sunday, July 14, 2019 - continued

5:00 PM - 6:00 PM Room: 221AB
Functional Imaging and Response Assessment - Multi-Disciplinary SNAP Oral
5:28 PM [Towards Lung Function Preserving Radiotherapy Using 5DCT and Biomechanical Model-Based Quantitative Measurement of Regional Dynamic Lung Compliance](#)
A Santhanam*, B Stiehl, M Lauria, I Barjaktarevic, P Lee, D Low

5:00 PM - 6:00 PM Room: 302
Novel Therapy Techniques - Therapy SNAP Oral
5:14 PM [Feasibility of Soft Robot Assisted 4pi Supine Breast Radiotherapy](#)
D Shang*, Q Lyu, R Neph, W Gu, K Sheng

5:28 PM [Modified Geant4 Physics for Efficient Radionuclide Shielding Calculations](#)
YM Yang*, J Lamb

Monday, July 15, 2019

1:45 PM - 2:45 PM Room: Stars at Night Ballroom 4
Strategies and Technologies for Radiosurgery of Multiple Intracranial Metastases
SAM Therapy Educational Course
M Milano*, N Agazaryan*, G Kim*
[Single Isocenter Treatment Technique for Multiple Cranial Targets - Multiple Metastases Element](#)
N.Agazaryan*

1:45 PM - 3:45 PM Stars at Night Ballroom 2-3
John R. Cameron Young Investigator Symposium - Multi-Disciplinary SNAP Oral
1:45pm [A Novel Multimodal Anthropomorphic Physical Pelvis Phantom for MRI-Based Radiotherapy](#)
K Singhrao*, J Fu, S Tenn, H Wu, P Hu, M Cao, A Kishan, R Chin, J Lewis

2:45pm [Robust Beam Orientation Optimization for Intensity-Modulated Proton Therapy](#)
W Gu*, R Neph, D Ruan, J Zou, L Dong, K Sheng

3:21pm [Improved Glioblastoma Survival Prediction Using Deep Learning-Based Radiomic Features From Preoperative Multimodal MR Images](#)
J Fu*, K Singhrao, X Zhong, X Qi, Y Yang, D Ruan, J Lewis

4:30 - 6:00 PM Room: 225BCD
Optimization in Imaging and Therapy
SAM Multi-Disciplinary Scientific Symposium - A Wang*, H Enderling*, K Sheng*
Moderator: K Sheng
5:20pm [Explore New Dimensions in VMAT](#)
K.Sheng*

Monday, July 15, 2019 - continued

6:30 PM Lone Star Ballroom, 2nd Floor, Grand Hyatt
AAPM Awards Ceremony and Reception
AAPM Fellow Recipients
Minsong Cao, PhD, DABR and Sharon Qi, PhD, DABR

Tuesday, July 16, 2019

Multi-Disciplinary General ePoster Discussion
9:30 AM - 10:00 AM Room: Exhibit Hall | Forum 6
Data Science Reproducibility/Robustness
Quantification of Pixel-Wise Uncertainty Associated with Automatic Segmentation
D Ruan*, T Zhao, D Low, M Steinberg

9:30 AM - 10:30 AM Room: Exhibit Hall | Forum 1
Expanding Horizons
2019 SPIE Medical Imaging
Q.Lyu*

10:00 AM - 10:30 AM Room: Exhibit Hall | Forum 6
Data Science in Radiation Therapy
Pancreas Localization Using Convolutional Neural Network
N Zhao*, K Sheng, D Ruan

10:30 AM - 11:00 AM Room: Exhibit Hall | Forum 2
Advanced MRI in RT
Dynamic Contrast Enhanced MRI for Semi-Quantitative Perfusion Analysis On a 0.35 T MR System: A Proof of Concept
C Colbert*, Y Gao, A Raldow, P Hu, Y Yang
PDFF Quantification for the Assessment of Red Bone Marrow During RT
M Bydder, Y Yang*, Y Gao, F Ali, M Steinberg, D Low, P Hu

3:45 PM - 4:15 PM Room: Exhibit Hall | Forum 6
Image Registration
Head and Neck MR-CT Registration Using Deep Learning Derived Synthetic CT
E McKenzie*, D Ruan, D O'Connor, M Cao, A Santhanam, K Sheng

Therapy General ePoster Discussion
3:45 PM - 4:15 PM Room: Exhibit Hall | Forum 3
QA of Linear Accelerator II
Use and Validation of IAEA Correction Factors for Small Field Dosimetry Commissioning: A Multi-Institution Study
V Yu*, C Lee, S Tenn, D O'Connell, L Weinstein, M Skinner, C McGuinness, D Saenz, N Papanikolaou, N Agazaryan

Tuesday, July 16, 2019 - continued

7:30 AM - 8:30 AM Room: 301
5D Imaging and Treatment Planning for Radiation Therapy - SAM Therapy Educational Course
D Low*, J Cai*, C Shi*
7:30 AM **Benefits and Challenges of the 5D-CT Process**
D.Low*

7:30 AM - 9:30 AM Room: 225BCD
Novel IGRT - Multi-Disciplinary Scientific Session
7:50 AM **Development and Evaluation Megavoltage-Topograms for Fast Patient Alignment On TomoTherapy**
X Qi*, Z Zhang, A Raldow, A Kishan, P Lee, A Chang, M Kamrava, M Steinberg, D Low

7:30 AM - 9:30 AM Room: Stars at Night Ballroom 2-3
Deep Learning Applications
7:30 AM **Deep Learning Model for the Detection of Setup Errors in Planar X-Ray Images**
J Lamb*, R Petragallo, D Low
8:10 AM **Automatic Abdominal Multi-Organ Segmentation From MRI Using Deeply Supervised DenseNet**
N Tong*, S Gou, K Sheng, M Cao

11:00 AM - 12:15 PM Room: Stars at Night Ballroom 2-3
Image Segmentation - Multi-Disciplinary Scientific Session
11:30 AM **Development of A Novel Mixing 2D-3D Fully Convolutional Neural Network for Pancreas Segmentation**
B Ye, X Qi, S Tan*

1:45 PM - 3:45 PM Room: Stars at Night Ballroom 2-3
Data Science in Medical Physics - Science Council Session
2:25 PM **Deep Learning MC: Fast CNN-Based Prediction of Monte Carlo Dose for MR-Guided Treatment Planning**
R Neph*, Y Huang, Y Yang, K Sheng

1:45 PM - 3:45 PM Room: 301
MR Guided RT: Treating with On-Board MRI
SAM Therapy Educational Course
X Li*, O Green*, B Raaymakers*, Y Yang*
3:15 PM **Advancing An MRgRT Program: Introduction of MR Pulse Sequence Development and Potentials of On-Board MRI**
Y Yang*

4:30 PM - 6:00 PM Room: 304ABC
Radiomics and Quantitative Imaging - Imaging Scientific Session
4:50 PM **A Novel Contrast CT Based Quantitative Characterization of Surgical Resectability in Pancreatic Cancer**
Y.Lao*, J.David, Z.Fan, K.Sheng, A.Shiu, E.Chang, R.Tuli, W.Yang

Wednesday, July 18, 2019

Multi-Disciplinary General ePoster Discussion
9:30 AM - 10:00 AM Room: Exhibit Hall | Forum 2
Deep Learning in Radiation Therapy
Ensemble Learning Methods to Assess Dosimetric Predictors of Patient-Reported Toxicities After Prostate Stereotactic Body Radiotherapy
X Pan*, J Huang, H Yu, X Qi

10:00 AM - 10:30 AM Room: Exhibit Hall | Forum 2
Deep Learning for Image Segmentation
A Conditional Generative Adversarial Deep Neural Network for Automatic Segmentation of Head and Neck Structures
A Santhanam*, J Wang, B Stiehl, R Chin, M Cao, D Low
Development A Novel Convolutional Neural Network with Paced Transfer Learning for CT Based Liver Segmentation
Z Zhang*, X Pan, X Qi

10:00 AM - 10:30 AM Room: Exhibit Hall | Forum 5
Adaptive Workflows and Efficiency
A Multi-Institutional Feasibility Study of a Novel Cloud-Based and GPU-Accelerated Clinical Workflow for Adaptive Radiotherapy
A Santhanam, M Cao*, P Potrebko, D Elliott, M Lauria, S Seshan, R Bosley, D Low

10:30 AM - 11:00 AM Room: Exhibit Hall | Forum 2
Deep Learning Segmentation II
A Tailored Deep Residual Neural Network for Ultra-Low Dose CT Denoising and Its Impact On Emphysema Scoring
T Zhao*, M McNitt-Gray, D Ruan

10:30 AM - 11:00 AM Room: Exhibit Hall | Forum 5
Deep Learning Segmentation II
Utilizing the Clique Atrous Spatial Pyramid Pooling for Pancreas Segmentation
M Yang, X Qi, S Tan*

10:30 AM - 11:00 AM Room: Exhibit Hall | Forum 6
Novel IGRT II
Generative Adversarial Network for Low Dose CT Denoising and Enhancement
B Ye, X Qi, S Tan*

7:30 AM - 8:30 AM Stars at Night Ballroom 2-3
The Science of Safety - From Brute Force QA to Focused Effort - Therapy Scientific Symposium
S Muttic*, A Kalet*, J Lamb*
8:10 AM **Risks and Benefits of Automation in Radiotherapy**
J.Lamb*

Wednesday, July 17, 2019 - continued

7:30 AM - 9:30 AM Room: 225BCD
[Image Analysis for Response Assessment - Multi-Disciplinary Scientific Session](#)

7:40 AM [A Convolutional Neural Network with ACGAN Augmented Data for Treatment Response Prediction Using Longitudinal Diffusion-Weighted MRI](#)
Y Gao*, V Ghodrati, A Kalbasi, J Fu, D Ruan, M Cao, C Wang, J Lewis, D Low, M Steinberg, P Hu, Y Yang

8:50 AM [Radiomics Prediction of Neoadjuvant Pathological Complete Response Outcome Based On Multi-Institutional Multiparametric MRI for Rectal Cancer](#)
M Huang*, P Yang, L Xu, L Shi, X Sun, X Zhong, N Li, F Yin, T Niu, X Qi

8:30 AM - 9:30 AM Room: Stars at Night Ballroom 4
[Recent Advances in Imaging for Treatment Verification](#)
SAM Therapy Educational Course
L Cervino*, J Wang*, O Green*, J Lewis*
9:24 AM [Comparing In-Room Treatment Imaging Verification Modalities](#)
J.Lewis*

1:45 PM - 3:45 PM Room: 225BCD
[NIH Investigator Scientific Highlights - Multi-Disciplinary Scientific Symposium](#)
C Glide-Hurst*, J Lamb*, Y Vinogradskiy*, K Sheng*, R Ten Haken*, I Sechopoulos*, X Wu*, Q Wu*, A Sawant*, J Stayman*

1:57 PM [R01 CA204189 Automated Image Analysis for Prevention of Radiotherapy Delivery Errors](#)
J Lamb*

2:21 PM [R01 CA230278 Robust IMPT with Automated Beam Orientation and Scanning Spot Optimization](#)
K Sheng*

4:30 PM - 6:00 PM Room: 304ABC
[Experimental Radiation Techniques - Therapy Scientific Session](#)

4:50 PM [A 3D-Printed, CT-Generated Monkey Phantom with Tissue and Bone Equivalent Materials](#)
K Woods*, J Olson, J Cline, J Bourland, K Sheng
5:20 PM [Commissioning and Testing of the Sparse Orthogonal Collimator for Small Animal IMRT](#)
K Woods*, R Neph, D Nguyen, D O'Connor, K Sheng

Wednesday, July 17, 2019 - continued

4:30 PM - 6:00 PM Room: 301
[Session in Memory of Dennis Leavitt: Novel Photon and Electron Therapy Techniques - Therapy Scientific Session](#)
4:55 PM [A Global-Sampling Optimization Framework for Single-Arc VMAT Using Dual Layer MLC](#)
Q Lyu*, R Neph, V Yu, D Ruan, K Sheng

Thursday, July 18, 2019

7:30 AM - 9:30 AM Room: 221AB
[Computed Tomography - Imaging Scientific Session](#)
7:50 AM [A Flexible Iterative Reconstruction Framework for Low Dose CT](#)
Q Lyu*, D Ruan, J Hoffman, R Neph, M McNitt-Gray, K Sheng

7:30 - 9:30 AM Room 225BCD
[Deformable Image Registration - Multi-Disciplinary Scientific Session](#)

7:40 AM [Improving Deformable Image Registration of 4DCTs Using a Generative Adversarial Deep Neural Network for Automated Lung Lobe Segmentation](#)
B Stiehl*, M Lauria, I Barjaktarevic, P Lee, D Low, A Santhanam

8:50 AM [Hands Off Deep Learning Derived Synthetic CT and Contour Driven Multimodal Registration in the Head and Neck](#)
E McKenzie*, N Tong, A Santhanam, M Cao, D Ruan, K Sheng

9:00 AM [Imposing Learnt Flexible Vector Field Prior Using a Deformation Representation Model in An Image Registration Network](#)
Y Sang*, D Ruan

7:30 AM - 9:30 AM Room: 301
[Brachytherapy - Therapy Scientific Session](#)

8:20 AM [High Dose Rate Interstitial Spine Brachytherapy Using An Intraoperative Mobile CT Guided Surgical Navigation System](#)
S Park*, L Macyszyn, P Venkat, A Lee, A Chang

10:00 AM - 12:00 PM Room: Stars at Night Ballroom 1
[Rationale and Evidence for SBRT](#)
SAM Therapy Scientific Symposium
V Yu*, C Song*, D Carlson*, A Marciscano*

10:05 AM [Radiation Therapy Dose Response Modeling and Optimization of Fractionation Schedules with Cancer Stem Cells](#)
V.Yu*

Thursday, July 18, 2019 - continued

10:00 AM - 12:00 PM Room: 303
[Imaging for Motion Management](#)

10:30 AM [Clinical Introduction of 5DCT Simulation for Lung Cancer](#)
M Lauria*, D O'Connell, N Agazaryan, J Lewis, J Lamb, D Thomas, P Lee, D Low

10:40 AM [Continuous Generation of Volumetric Images During SBRT Treatment Using KV Images and An External Respiratory Surrogate](#)
M Lafreniere*, N Mahadeo, J Lewis, J Rottmann, C Williams

11:20 AM [Image Regression Motion Prediction for MRI-Guided Radiotherapy](#)
J Ginn*, D Ruan, D Low, J Lamb

10:00 AM - 12:00 PM Room: 225BCD

10:30 AM [Automatic Fiducial Marker Detection in Prostate Cancer MR Images Using Generative Adversarial Networks \(GANs\)](#)
K Singhrao*, J Fu, A Kishan, J Lewis

11:00 AM - 12:00 PM Room: Stars at Night Ballroom 2-3
[Robust and Reproducible Research in Medical Physics - Multi-Disciplinary Scientific Session](#)

11:30 AM [Learning for Daily Pancreas SBRT Plan Adaptation Decision](#)
Y Min*, M Tyran, M Cao, P Lee, M Steinberg, D Ruan

Therapy General ePoster Viewing Room: ePoster Forums

(ePosters available for viewing during exhibit hall hours: SU|12:30-5:00, MO/TU|9:00-5:00, WE|9:00-2:00)

[Fixed-Beamline Optimization for Intensity Modulated Carbon Ion Therapy](#)
H Liu*, W Gu, K Sheng

[A Probabilistic Margin for Sensitivity-Regularized Robust Optimization in Intensity-Modulated Proton Therapy](#)
W Gu*, D Ruan, J Zou, L Dong, K Sheng