

# JSRT-JSMP Joint International Conference on Radiological Physics and Technology (ICRPT)

## Oral

April 13 (Thu.) 502

### Radiomics

13:30~14:20 Chairperson Akihiro Takemura (Kanazawa University)  
Satoru Utsunomiya (Niigata University)

- TPI-001 Topological Imaging Signatures with Tumor Volumes for Prediction of Distant Metastasis after Stereotactic Ablative Radiotherapy for Patients with Stage I Non-small Cell Lung Cancer Kyushu University Takumi Kodama
- TPI-002 Development of Radiomics-based Deformable Image Registration Algorithm Iwate Medical University School of Medicine Yoshiro Ieko
- TPI-003 Computed Tomography-based Radiomics for Classifying Neurological Prognosis of Cardiac Arrest Patients Hokkaido University Takahiro Nakamoto
- TPI-004 Investigation of Repeatability of Persistent Homology Features for Patients with Lung Cancer Based on Computed Tomography Images Ho Chi Minh City Oncology Hospital, Viet Nam Quoc C. Le
- TPI-005 Multi-institutional Radiomics Phantom Study Using on-board Volumetric Images Kyoto University Takanori Adachi

### Radiation Protection

14:30~15:20 Chairperson Yasutaka Takei (Kawasaki University of Medical Welfare)  
Keiichi Akahane (QST)

- TPI-006 Findings for Manufacturing Novel X-ray Shields Having Elasticity Kanazawa University Tatsuya Maeda
- TPI-007 A Study on Changes in Exposure Dose through Development of Bismuth Shielding during Pediatric General Radiography Examination Hanseo University, Korea Beom Chan Park
- TPI-008 Scattered Dose Rate Distribution and Eye Lens Doses of Physicians in Over-couch X-ray Tube Geometry: Effect of Radioprotective Curtain Length Kanazawa University Kosuke Matsubara
- TPI-009 A Study on the Calculation of Entrance Surface Dose from Exposure Index as per IEC in Mobile Chest Radiography The Graduate School of Dongseo University, Korea Hyejin Jo
- TPI-010 Proposal of New Effective Dose Conversion Factor Using SSDE Obtained from Dose Index Registry Tokyo Medical University Ibaraki Medical Center Masato Takanashi

### Image Informatics: Classification

15:30~16:20 Chairperson Chisako Muramatsu (Shiga University)  
Taiki Magome (Komazawa University)

- TPI-011 Production of X-ray Image Classification Software Using Convolutional Neural Network And Usability Assessment Shingu College, Korea Yu-Jeong Lee
- TPI-012 Deep Learning Based Gender Classification of Panoramic Dental X-ray Chonnam National University, Korea Seung-Min Hwang
- TPI-013 Pilot Study for Deep Learning-based Automatic Classification of Sphenoid Sinus among Head Post-mortem Computed Tomography Images in Drowning Victims Busan Institute, National Forensic Service, Korea Jin-Haeng Heo
- TPI-014 Preliminary Study on the Classification of Atrial Fibrillation Types Using Deep Learning Models with Attention Mechanism: Comparison of Vision Transformer and CNN Model Fujita Health University Hina Kotani
- TPI-015 Deep Learning Based Nuclear Lung Tumor Classification Model Shingu University, Korea Min Ju Kim

### Treatment Planning Computed Tomography

16:30~17:20 Chairperson Noriyuki Kadoya (Tohoku University)  
Yoshitomo Ishihara (Wakayama Medical Center)

- TPI-016 Withdrawn
- TPI-017 Dosimetric Impact of Combined 4D-CT Ventilation and SPECT Perfusion Image-guided Treatment Planning for Lung Cancer Komazawa University Graduate School Genta Michimata
- TPI-018 Characterization of a New X-ray Computed Tomography Polymer Gel Dosimeter National Cancer Center Hospital East Hidenobu Tachibana

- TPI-019 Comparison between Planning CT Image and Dose Distribution Signatures for Prediction of Radiation-induced Pneumonitis in Patients with Non-small Cell Lung Cancer before Stereotactic Ablative Radiotherapy Kyushu University Junya Eda  
 TPI-020 Determination of Initial Parameters of Stoichiometric CT Calibration MVCT Model Hiroshima University Shogo Tsunemine

### Photon Dosimetry and Electron Irradiation Technique

17:30~18:20 Chairperson Motoharu Sasaki (Tokushima University)  
 Chie Kurokawa (Juntendo University)

- TPI-021 Evaluation of Beam Matching Accuracy Comparison for Same Model Linear Accelerator Choonhae College of Health Sciences, Korea Yonlae Kim  
 TPI-022 Investigation of Properties Related to BeO-based OSL Dosimeter Sensitivity in High-energy Photon Beam Kanazawa University Miku Ando  
 TPI-023 Investigation of High Precision of Electron Beam Convergence under Low Vacuum and Practicality of Decompression Chamber for Electron Beam Scanning Irradiation Tokyo Metropolitan University Yuma Hayashi  
 TPI-024 Design, Fabrication and Validation of 3D Printed Specific End Term Applicator for Electron Radiation Therapy Labaid Cancer Hospital and Super Speciality Center, Bangladesh Md Jobairul Islam  
 TPI-025 Study on Convergence Control and Convergence Distance of Electron Beam Using Multiple Solenoids Tokyo Metropolitan University Ryo Nishida

April 14 (Fri.) 502

### Image Informatics: Segmentation

8:00~8:40 Chairperson Haruyuki Watanabe (Gunma Prefectural College of Health Sciences)  
 Noriyuki Kadoya (Tohoku University)

- TPI-026 Two-stage X-ray-based Segmentation of Hip Joint Space Using Deep Learning Hokkaido University Haolin Wang  
 TPI-027 Novel Segmentation Model for Well-differentiated Hepatocellular Carcinoma Regions Using Dense V-net with Three Phase Images of Dynamic Contrast-enhanced CT Saga University Hospital Noriyuki Nagami  
 TPI-028 Development of an Accurate and Rapid Auto-segmentation Method for Alveolar Bone and Teeth Using Virtual Cone-beam Computed Tomography and Artificial Intelligence Technology Tokushima University Atsushi Takeya  
 TPI-029 Rheumatoid Arthritis Synovitis Segmentation Based on Unsupervised Learning and Time-intensity Curve Signal Data on Dynamic Contrast Enhanced MRI Hokkaido University Yijun Mao

### Image Informatics: Detection

8:50~9:30 Chairperson Rie Tanaka (Kanazawa University)  
 Jun'ichi Kotoku (Teikyo University)

- TPI-030 Ensemble Detection Scheme of Pneumonia from Chest X-ray Images Using Multiple Convolution Neural Networks Fujita Health University Amase Ito  
 TPI-031 Improving Calcified Lesion Detection in Coronary Artery Calcium Scan by Using DenseNet: A Phantom Study Kaohsiung Medical University, Taiwan Ching-Ching Yang  
 TPI-032 The Implementation of Automated Intracerebral Hemorrhage Detection and Radiology Report Using Deep Learning Chang Gung University, Taiwan Yu-Pei Wang  
 TPI-033 A State-of-the-art Python Model for Breast Cancer Detection Gono Bishwabidyalay, Bangladesh Afroja Nahida

### Nuclear Medicine 1: Performance Evaluation

9:40~10:20 Chairperson Kohei Hanaoka (Kindai University)  
 Hideaki Tashima (QST)

- TPI-034 Evaluation of the Partial Volume Effects Using Small-sphere Phantom in PET/CT System Iwate Medical University Toshiaki Sasaki  
 TPI-035 Performance Evaluation of Body-contouring Scan in Lu-177 SPECT/CT with Ring-shaped Whole-body CZT-camera Osaka University Hospital Hidetaka Sasaki  
 TPI-036 Imaging Performance of a Brain-dedicated Hemispherical PET over Whole-body Cylindrical Scanners QST Go Akamatsu  
 TPI-037 Tracking the Same Fast-LGSO Crystals by Changing Surface Treatments for Faster Timing Resolution in PET QST Miho Kiyokawa

**Nuclear Medicine 2: Simulation and Others**

10:30~11:10 Chairperson Koichi Okuda (Hirosaki University)  
Keisuke Tsuda (Juntendo University)

- TPI-038 A Monte Carlo Simulation Study of Performance Evaluation for Sensitivity and Scatter Fraction in Gamma Camera Scintigraphy with TlBr Pixelated Semiconductor Detector Using Various Parallel-hole Collimator Designs  
Eulji University, Korea Chanrok Park
- TPI-039 Potential of 909 keV Compton Imaging Outperforming PET in  $^{89}\text{Zr}$  Measurement with Si/LGSO WGI: A Simulation Study  
QST Hideaki Tashima
- TPI-040 Comparison of Kinetics of the Produced Positron Emitters after Carbon Beam Irradiation and That of the MRI Contrast Agents in Rat Tumor  
QST Chie Toramatsu
- TPI-041 Positronium Lifetime Measurement in Stable Radical Aqueous Solutions for Dose Estimation in Radiotherapy  
QST Sodai Takyu

**Image Informatics: Image Processing**

15:30~16:20 Chairperson Yoshikazu Uchiyama (Kumamoto University)  
Takeyuki Hashimoto (Kyorin University)

- TPI-042 Development of a Deep Learning-based Bone Suppression Technique for Pediatric Dynamic Chest Radiography Using Virtual Patients  
Kanazawa University Futa Goshima
- TPI-043 Tube Deletion in Chest Radiograph Using Cycle Generative Adversarial Networks  
Fujita Health University Supanuch Patipittana
- TPI-044 Development of Super-resolution for Brain MRI Images  
National Taiwan University, Taiwan Qian Hua Wu
- TPI-045 Deep Learning Technology for Age Estimation Based on Selected Tooth Condition Using Dental Radiography  
Chonnam National University, Korea Jung-Woo Yun
- TPI-046 Dental Estimation Age Using Darknet-19 Based on Dental X-ray Panoramic Images  
Chonnam National University, Korea Jihyeong Ko

**MR: Analysis and Technique**

16:30~17:20 Chairperson Yasuo Takatsu (Fujita Health University)  
Koya Fujimoto (Yamaguchi University)

- TPI-047 Quantifying Regional Cerebral Blood Flow Using Motion-compensated Diffusion Imaging with Phase-contrast (mDIP)  
Kanazawa University Naoki Ohno
- TPI-048 Evaluation of Submillimeter Non-rigid Registration for Diffusion Tensor Imaging Distortion Using CT Images  
Miyagi National Hospital Tetsuya Kitazawa
- TPI-049 Altered Functional Connectivity and Structural Connectivity in Patients with Focal Epilepsy Using Resting-state Functional MRI and Diffusion MRI  
Chang Gung University, Taiwan En-Chi Tsui
- TPI-050 Optimization of Median Modified Wiener Filter for Improving Cerebrospinal Fluid Segmentation Performance in Brain MR Image: A Simulation Study  
Gachon University, Korea Sewon Lim
- TPI-051 MR Spectroscopy-based Metabolite Ratio Analysis of MRI Images for Metastatic Lesion  
University of Rajshahi, Bangladesh Alamgir Hossain

**Particle: Dosimetry and Monte Carlo Simulation**

17:30~18:20 Chairperson Chang Weishan (Tokyo Metropolitan University)  
Shinnosuke Matsumoto (Tokyo Metropolitan University)

- TPI-052 Investigation of Response Characteristics of Radiophotoluminescence Dosimeter in Intensity-modulated Proton Therapy  
Fujita Health University Miuna Hayashi
- TPI-053 Simulation Evaluation of Range-estimation Uncertainty for Therapeutic Carbon-ion Beams by Measuring Secondary Electron Bremsstrahlung with a Large-pinhole X-ray Camera  
Gunma University Michiko Tsuda
- TPI-054 Monte Carlo Calculation of Perturbation Correction Factor for Stem in Micro Ionization Chamber in Proton Beam  
Fujita Health University Kaito Iwase
- TPI-055 Measurement of the Nuclear Reaction Cross Sections of Positron-emitting Nuclides Using the Annihilation Gamma-ray Detection System nBOLPs  
Osaka University Masaki Kato
- TPI-056 Monte Carlo Calculations of Chamber-specific Perturbation Correction Factors for Several Ionization Chamber Types in Carbon-ion Beams  
Tokyo Metropolitan University Yuka Urugo

**April 15 (Sat.) 502****Irradiation and Treatment Planning Technique**

8:00~8:50 Chairperson Kaoru Ono (Hiroshima Heiwa Clinic)  
Shuichi Ozawa (Hiroshima High-Precision Radiotherapy  
Cancer Center)

- TPI-057 Robust Beam Delivery with Jaw Margin Expansion in Small Field Linac-based Stereotactic Radiosurgery  
Keio University School of Medicine Kohei Oguma
- TPI-058 Optimal Setting of Virtual Bolus Method for Breast Cancer Treated with Volumetric Modulated Arc Therapy  
The University of Tokyo Takumi Sakamoto
- TPI-059 Evaluation of Dose Dividing Ratio in a Hybrid Volumetric Modulated Arc Therapy Plan for Non-small Cell Lung Cancer  
Juntendo University Kenta Suga
- TPI-060 Fundamental Evaluation of Brass Mesh Bolus in Photon Beam Therapy Fujita Health University Honoka Inagaki
- TPI-061 What Is the Optimal Isodose Line for Stereotactic Radiotherapy for Brain Metastases Using HyperArc?  
Osaka International Cancer Institute Tomohiro Sagawa

**Quality Assurance and Quality Control**

9:00~9:50 Chairperson Naoki Kinoshita (University of Fukui Hospital)  
Naoki Hayashi (Fujita Health University)

- TPI-062 Using Monte Carlo to Simulate Radioactive Materials, Ambient Dose Equivalent H(10) in Linacs Room in FF and FFF Mode  
Kyushu University Soai Dang Quoc
- TPI-063 A Study on Lifetime Prediction Using Linear Regression Analysis of Diode Electron Gun for a Linear Accelerator  
Osaka Metropolitan University Hospital Tomohiro Sahara
- TPI-064 Prediction of Vertebral Compression Fracture after Stereotactic Body Radiation Therapy for Spinal Metastases Using Radiomic  
and Dosiomic Features Komazawa University Syoma Ide
- TPI-065 Generating Fully Random Prediction Results of Patient-specific Quality Assurance Hiroshima University Hospital Akito Saito
- TPI-066 Prediction of Tumor Growth Trajectories in Patients with Stage I Non-small Cell Lung Cancer Receiving Stereotactic Body Radio  
Therapy Kyushu University Kazuki Mitsushima

**Detector**

10:00~10:50 Chairperson Yusuke Oribe (Nuclear Regulation Authority)  
Keisuke Maehata (Teikyo University)

- TPI-067 A Novel Function for Wearable Dosimeters: to Determine Both Incident Direction and Absolute Dose of X-rays during IVR  
Procedure Kanazawa University Takashi Asahara
- TPI-068 Performance Evaluation Standards for Medical Compton Imaging Systems QST Go Akamatsu
- TPI-069 Application of a Standard Performance Evaluation Method for a Cost-effective Compton Camera Using High-sensitive Inorganic  
Scintillators QST Mitsutaka Yamaguchi
- TPI-070 Withdrawn
- TPI-071 Simulation Study of a Deep-learning Based Position-sensitive Forceps-type Coincidence Detector QST Ryotaro Ohashi

**Particle: Treatment Planning Technique**

14:10~14:50 Chairperson Hideyuki Mizuno (QST Hospital)  
Akihiko Matsumura (Gunma University Heavy Ion Medical  
Center)

- TPI-072 Robustness Evaluation of Mean Liver Dose in Proton Therapy under Various Fractionation Scheme and Fraction-specific Random  
Setup Error Hokkaido University Koki Kasamatsu
- TPI-073 Evaluation of the Proton Transport Algorithm in Monte Carlo Code PHITS by Fano Test  
Fujita Health University Yuya Nagake
- TPI-074 Development of a DNA Damages Repair Model Considered Alternative Non-homologous End Joining  
Osaka University Hikaru Yamaguchi
- TPI-075 Spatial Resolution of Compton Camera in BNC Reaction Imaging Gunma University Makoto Sakai

**Particulate: Evaluation of Implanted Electronic Device**

15:00~15:40 Chairperson Taku Inaniwa (QST)  
Taeko Matsuura (Hokkaido University)

- TPI-076 Evaluation of Air Quality in the Radiation Therapy Room Hanseo University, Korea Kim Dae hyun  
TPI-077 Tolerable Doses of Electronic Devices in Radiation Therapy Gunma University Hospital Masami Miyajima  
TPI-078 Evaluation of Electronic Device Soft Errors in Heavy Ion Therapy Using a Human Phantom Gunma University Hospital Hiroaki Masuda  
TPI-079 Contribution Evaluation of Secondary Particles to Soft Errors in Carbon Ion Radiotherapy Gunma University Yudai Kawakami

**Dosimetric Evaluation and Biophysics**

15:50~16:30 Chairperson Masataka Oita (Okayama University)  
Hiroyuki Okamoto (National Cancer Center Hospital)

- TPI-080 Investigation of Longitudinal Magnetic Field Effects on OH Radical Osaka University Akiho Owada  
TPI-081 Impact of Cherenkov Light Correction Methods and Small-field Effects on the Plastic Scintillation Detector Komagome Hospital Yu Arai  
TPI-082 Evaluation of the Dosimetric Effect of Interfractional Motion Associated with a High-fluence Beam in a Low-density Area of the Planning Target Volume Using Intensity-modulated Radiation Therapy Juntendo University Hiroto Adachi  
TPI-083 High-dose-rate Brachytherapy for Cervical Cancer: The Effect of Total Reference Air Kerma on the Results of Single-channel and Tri-channel Applicators University of Rajshahi, Bangladesh Alamgir Hossain

**X-ray 2: Technique**

16:40~17:30 Chairperson Shinichiro Hirose (Osaka University Hospital)  
Nao Ichikawa (Kobe Tokiwa University)

- TPI-084 Cone-beam CT Hepatic Arteriography Image Comparative Evaluation According to the Dilution Ratio of Contrast Agent during Transarterial Chemoembolization Seoul National University Bundang Hospital, Korea Changjoo Park  
TPI-085 A Study on Image Quality and Dose Evolution According to Exposure Conditions in Ribs X-ray Imaging of Pediatric Patients Hanseo University, Korea Ho-jun Choi  
TPI-086 Development and Performance Evaluation of Improved X-ray Detector System for Whole Body Scanography Based on CsI Material General Graduate School of Gachon University, Korea Minji Park  
TPI-087 Development and Usefulness Evaluation of Auxiliary Device for Weight Bearing Radiography Choonhae College of Health Sciences, Korea Junsik Oh  
TPI-088 Using System Simulation Software Flexsim to Improve the Workflow Line-taking the Radiology Department of a Hospital in Hsinchu, Taiwan as An Example The University of Hsinchu, Taiwan Shih-Wei Tseng

**April 16 (Sun.) 502**

**X-ray 1: Analysis**

8:00~8:40 Chairperson Takeshi Takaki (Hospital of University of Occupational and Environmental Health)  
Kuniyuki Hidaka (Osaka University Hospital)

- TPI-089 A Correction Method for Object Edge Blurring That is Effective for Quantitative Analysis Using Photon Counting Imaging Kanazawa University Daiki Kobayashi  
TPI-090 Suitability of High-tube-voltage Imaging When Using Energy Resolving Photon Counting Detector (ERPCD): Simulation Study Kanazawa University Rina Nishigami  
TPI-091 A Study on Clinical Exposure Index Using Actual Clinical Data of Mobile Chest Radiography in University Hospital of Korea Dongseo University, Korea Hyemin Park  
TPI-092 Detection Performance of Pulmonary Impairments with Dynamic Chest Radiography: A Virtual Imaging Trial Kanazawa University Shunya Yamaguchi

**Radiation Measurement**

8:50~9:30 Chairperson Hiroki Saito (Gunma Paz University)  
Hiroyuki Arakawa (Kyushu University)

- TPI-093 Evaluation of Backscatter Factor by an Anthropomorphic Phantom for Pediatric in General Radiography Fujita Health University Thanakrit Suebboonprathueng

TPI-094	Effect of Patient Position on Radiation Dose in Chest Lateral Radiography with AEC Mode	Hanseo University, Korea	Seung Uk Kim
TPI-095	Analysis of Adjacent Organs Exposure Doses in X-ray Guided Stereostatic Breast Biopsy 2D Procedure and 3D Procedure	Samsung Medical Center, Korea	Beeun Lee
TPI-096	Feasibility Study of Optical Observation of the Boron Dose Distribution as a Quality Assurance Tool for Boron Neutron Capture Therapy	Kyushu University	Hideya Maeda

**CT 1: Analysis**

9:40~10:20 Chairperson Takanori Masuda (Kawasaki University of Medical Welfare)  
Shohei Kudomi (Yamaguchi University Hospital)

TPI-097	Quantitative Measurement of Small Pulmonary Vessel Volume to Evaluate Right Ventricular Function in Patients with Acute Pulmonary Embolism	General Hospital of Ningxia Medical University, China	Yifan Wang
TPI-098	Verification of CT Contrast Enhancement Effect by a Systemic Circulating Vascular Phantom	Kitasato University	Tatsuya Todoroki
TPI-099	Study of Noise Reduction Effect on Temperature Resolution in CT-based Thermometry	Kitasato University	Shinya Mizukami
TPI-100	Spectral Imaging Performance Evaluation for a Prototype Full-size Photon Counting CT System at Clinical Dose Levels	Canon Medical Research USA	Xiaohui Zhan

**CT 2: Dose and Technique**

10:30~11:10 Chairperson Katsuhiko Ichikawa (Kanazawa University)  
Hiraku Kawamura (Gumma Prefectural College of Health Sciences)

TPI-101	Establishment of National Diagnostic Reference Levels and Achievable Doses for CT Protocols in Korea	Daegu Health College, Korea	Jaesung Kim
TPI-102	Thyroid Dose Reduction Related to the Overranging Effect by Using a Novel Sponge-type Shield during High-pitch Chest CT Examination	Kanazawa University	Kazuki Takegami
TPI-103	Quantitative Image Quality Comparison between Normal Resolution and Super High Resolution Modes of a Clinical Prototype Photon Counting CT System	Canon Medical Research USA	Ruoqiao Zhang
TPI-104	Estimating the Artifact Correction Integrity of MAR in Different Density of Metal Tooth Prosthesis	Chang Gung Memorial Hospital, Taiwan	Yin-Chun Lin

**Image Informatics: Reconstruction**

11:20~12:00 Chairperson Ikuo Kawashita (Hiroshima University)  
Akihiro Haga (Tokushima University)

TPI-105	Iterative CT Reconstruction with Deep Neural Networks	Hirosaki University	Sho Ozaki
TPI-106	Subject-specific Deep Learning Reconstruction for Fast Free-breathing Cardiac Perfusion MRI	University of Minnesota, USA	Mehmet Akcakaya
TPI-107	Development of a Method for Improvement of SPECT Images Reconstructed from Sparse Projection Data by Deep Learning Technique	Hiroshima International University	Reina Yano
TPI-108	End-to-end Unsupervised CNN-based PET Image Reconstruction with Relative Difference Penalty	Hamamatsu Photonics K.K.	Fumio Hashimoto

**Image Informatics: Prediction**

14:00~14:40 Chairperson Atsushi Teramoto (Fujita Medical University)  
Hidetaka Arimura (Kyushu University)

TPI-109	A Study on a Predictive Model for Renal Stone Diagnosis Based on Artificial Neural Network	Gimcheon University, Korea	Jang Hye-won
TPI-110	Automated Response Prediction of the Extracorporeal Shock Wave Lithotripsy Using Abdominal CT Images	Fujita Health University	Yuta Suganuma
TPI-111	Prognoses Prediction of NSCLC Patients with CT Image Features Linked with Gene Expression	Kyushu University	Yu Jin
TPI-112	Artificial Neural Network for Prediction Model of Histological Subtypes for Breast Cancer Using <sup>18</sup> F-FDG PET/CT	University of Rajshahi, Bangladesh	Alamgir Hossain

