ISMRM 2024 abstracts

GE HealthCare is pleased to announce the following abstracts that were accepted for presentation at the 2024 Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM) scheduled to be held May 4-9 in Singapore. Beyond AIR™ Recon DL and Sonic DL™ Cine, GE HealthCare continues its commitment to advancing MR imaging through deep-learning-based technologies, novel acquisition techniques and high-performance gradient systems. Ⓢ

AI/Deep Learning

A Deep Learning Prediction Model for Deep Brain Stimulation Optimization by fMRI
University Health Network

Integrated Multi-label 3D Deep Learning Multi-task Model for Intelligent MR Spine Scan Planning
GE HealthCare

Contrast neutralization as a strategy to achieve generalizability in MR deep learning applications
GE HealthCare

Deep Learning based Phase Correction with Noise and Artifacts Removal for MERGE
GE HealthCare

Combining domain knowledge and foundation models for one-shot spine labeling
GE HealthCare

Deep Learning for MR-only Radiation Therapy Planning in the Head&Neck: Synthetic CT conversion, Organ-At-Risk Segmentation and MR Scan Performance Improvement
Erasmus Medical Center

Data Driven Metric Learning from Foundation Model for One-shot Localization and Segmentation of MR Shoulder Localizer Volume Data to drive AutoLocalzier workflow.
GE HealthCare

Motion Correction in Multi-shot Acquisitions by Removal of Motion-ridden Shots to fill with Unrolled DL Reconstruction
Brigham and Women's Hospital

Automatic spine station identification from surface coil sensitivity maps of MR imaging using deep learning
GE HealthCare

Reduced Noise and Motion Artifacts for MUSE Reconstruction using Deep Learning-based Phase Correction
GE HealthCare

Deep Learning enhanced joint reconstruction and Nyquist ghost correction in multiband diffusion imaging via dynamic self-phase-error estimation and pseudo-sensitivity based virtual channel combination.
Mayo Clinic; Stanford University

Deep learning based chemical shift artifact reduction in Zero Echo Time (ZTE) MRI
GE HealthCare

MR contrast-invariant deep learning method for Synthetic CT generation and evaluation of its quantitative accuracy
Newcastle University

Prospective Quality Metric Assessment of SyntheticCT Images as a Confidence Predictor of the Deep Learning model
University of Zurich

MR Thermometry with a Deep-Learning Reconstruction
University of Iowa

DL based reconstruction method for an undersampled PROPELLER MRI data
GE HealthCare

Metal artifact synthesis: Enabling inclusive Deep learning for patients with implants
GE HealthCare

DL-based Phase Correction Enables Robust Real Diffusion-Weighted MRI with Increased Diffusion Contrast
GE HealthCare

Body/ Vascular

Use of distortion correction combined with deep learning reconstruction in diffusion-weighted MRI: how does image quality compare to conventional acquisition?
Inova Fairfax Hospital

Respiratory-resolved 4D MRI: Further enhancements on the interplay of DL reconstruction and binning strategies
Massachusetts General Hospital

A Two Step Workflow to Support Fully Autonomous MR Scanning in Prostate
GE HealthCare

Utilizing a novel deep learning algorithm to improve pediatric abdominal 3D LAVA-Flex image quality
Massachusetts General Hospital

Application of a novel deep learning algorithm to routine liver 3D LAVA-Flex acquisitions
Massachusetts General Hospital

Improving Image Quality of Dynamic Contrast Enhanced Abdominal MRI Using a Novel Deep Learning Reconstruction
Massachusetts General Hospital

Optimizing Temporal Resolution of Dynamic Contrast Enhanced Abdominal MRI Using Deep Learning Reconstruction
Massachusetts General Hospital

Scalable and Transferable U-Net for Accurate Simultaneous 3D MRI Segmentation of Gestational Sac and Decidual Tissue in Cesarean Scar Pregnancy
GE HealthCare

Fast and High-Resolution Intracranial MR Angiography at 7T using FLEXA
GE HealthCare

Motion-robust distortion-free breast MRI using DWI-PROPWLLER with deep learning reconstruction
University of Washington

Cardiac

Optimization of variable-density undersampling for accelerated myocardial delayed enhancement with deep learning reconstruction
Inova Fairfax Hospital

Analysis of accuracy and accuracy requirements for an automated cMR slice prescription tool
GE HealthCare

An appropriate threshold for LGE images using deep learning-based reconstruction in revelation clinically unrecognized myocardial infarction
GE HealthCare

Cardiovascular MR Multitasking T1-T2 Joint Mapping in Healthy Subjects and Cardiomyopathy Patients on both 1.5T and 3T
Cedars-Sinai Mecial Center

Core Technology

Prospective gradient nonlinearity correction for diffusion MRI: uncover lost sensitivity to non-Gaussian diffusion and tissue microstructure
University of Michigan

Approaches for correcting motion in diffusion-weighted imaging acquired using diffusion gradient cycling
GE HealthCare

Evaluating Specific Absorption Rate Effects of a Flexible Receive-Only Coil With Various Blocking Configurations via Simulation
Weill Cornell Medicine

Adaptable Twenty-Channel Supine Breast Coil for MRI
GE HealthCare

MR Sequence Design in the Low Stochastic Regime - development of a low-SAR T2-weighted scan
Oxford University

Multi-Channel PROPELLER-MRI Acceleration using NUFFT Compressed Sensing at mid field MRI of 0.5T
GE HealthCare

The SNR-Optimal Sodium MRI Encoding
Aarhus University

Feasibility of motional eddy current-reduced, passive eddy current shielding of MRI gradient coils
GE HealthCare

Eddy current heating of weakly conductive objects in high-performance gradient coils
GE HealthCare

Slice-by-slice B0 Shimming for high-resolution diffusion MRI with an ultra-high performance head-only gradient
Uniformed Services University of the Health Sciences

Robust inter-blade and inter-slice motion correction reconstruction for PROPELLER MRI
GE HealthCare

A Novel 30-Channel Ultra-flexible Phased-Array for High-Resolution and Parallel Imaging Optimized MR Hand/Wrist/Brachial Plexus Imaging at 3T
Hospital for Special Surgery

Hardware/ Systems

Simultaneous MRI and Ultrasound Imaging on a High-performance Gradient Platform
University of Iowa; University of Wisconsin Madison; University of Michigan

MSK

Cartilage and Meniscus Segmentation for Knee MRIs: 2D, 3D and Foundational Models
GE HealthCare

Initial clinical experience of ZTE based bone imaging with DL-based Chemical Shift Correction
Cliniques Universitaires Saint-Luc

Quantitative Assessment of Segmented Masks: A Deep Learning Regression and Classification Study
GE HealthCare

3D UTE With Twisted Trajectories
University of California San Diego

Fast spin-echo triple-echo dixon (fTED) for fat suppression at 0.5T in the presence on knee implant.
Manipal Hospital

Deep learning based reconstruction 3D ZTE-MRI for calcium deposit using computed tomography as reference
GE HealthCare

Improved Fat Suppression in 3-Dimensional Double-Echo Steady-State Sequence with Water Excitation using Modified DIXON Technique
Hospital for Special Surgery

Neuro

Dynamics of Respiratory Motion in Slow Flow Measurement using Simultaneous Coherent and Incoherent Motion Imaging Method
Walter Reed National Military Medical Center

Silent Looping Star fMRI with enhanced Encoding and Reconstruction Performance
King's College London

Submillimeter Isotropic Whole Brain Diffusion Tensor Imaging at 3T with 2D Multi-band Multi-shot EPI acquisition and Deep Learning Reconstruction
Duke University

Non-Linear Echo Combination Allows for Reduced Scan Times in T2* Weighted Imaging at 1.5T
GE HealthCare

Rapid high-resolution whole-brain 3D multi-parametric and multi-contrast MRI with DL-based acquisition & reconstruction
GE HealthCare

Application and Assessment of Deep Learning to Routine 2D T2 FLEX Spine Imaging
Beth Israel Deacones Medical Center

Two novel applications of 3D amplified MRI (aMRI)
Mātai Medical Research Institute

Optimization of Simultaneous Coherent/Incoherent Motion Imaging (SCIMI): Combined Diffusion and Velocimetry Mapping for Glymphatic Circulation
Walter Reed National Military Medical Center

Myelin Water Imaging on MAGNUS (high-performance Mesoscale Anatomy Gradient for Neuroimaging with Ultrafast Scanning) system
University of British Columbia

A high-resolution MT-weighted Zero Time Echo sequence for 7T - initial experience with healthy volunteers and Multiple Sclerosis patients
GE HealthCare

Comparison between MTR_Rex and new quantitative CEST parameter APT_T1 by solving Bloch equation of multiple pool model
Jisenkai Brain Imaging Research Center

Silent resting-state fMRI using Looping Star Multi-echo acquisition in a 3T high-performance gradient (300 mT/m & 750 T/m/s) MRI system (MAGNUS)
Uniformed Services University of the Health Sciences

Cross Site Reproducibility for standard and ultra-high b-value diffusion imaging high-performance gradient 3T MAGNUS MRI systems.
University of Iowa; University of Wisconsin Madison

Comparison of Anatomical Imaging Between a High Performance Head Only and Whole Body Scanners
University of Iowa

Deep learning enhanced DWI MUSE at 0.5T
IIT Madras

Rapid, motion robust T2 and T2FLAIR imaging
Karolinska Institute

Improving Oscillating Gradient Spin Echo based Time Dependent Diffusion Imaging with Deep Learning based Reconstruction: A Feasibility Study
Sun Yat-sen University

Workflow/ Visualization

Longitudinal lesion tracking using Self supervised vision transformers.
GE HealthCare

Patient adaptive intelligent MRI scanning with consistent image quality
GE HealthCare

A fully automated implant mode scan workflow
Hospital for Special Surgery