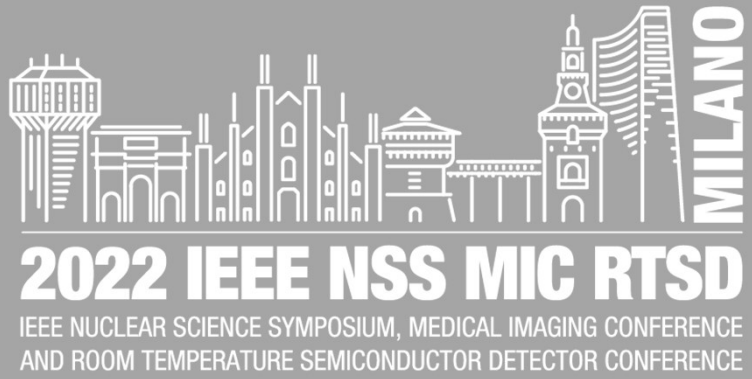

STIR: 13th Users and Developers' workshop 2022

Daniel Deidda, Charalampos Tsoumpas, Nikos Efthimiou

Thursday, 10/11/2022

Software for Tomographic Image Reconstruction

- C++ open-source library
- Data/image processing
- SPECT/PET image reconstruction (sinogram and list mode)
- Multiple scanners models
- Python and Matlab interface
- Used as "engine" by the synergistic image reconstruction framework (SIRF)

Previous meetings

2004 – Rome
2009 – Orlando
2011 – Valencia
2012 – Anaheim
2013 – Seoul
2014 – Seattle
2015 – San Diego
2016 – Strasbourg
2017 – Atlanta
2018 – Sydney
2019 – Manchester
2020 – Virtual
2022 – Milan

Program

7:00 PM	STIR-01	**Opening speech** D. Deidda National Physical Laboratory, Teddington, UK
7:05 PM	STIR-02	**Integration of advanced 3D SPECT modelling for pinhole collimators into the open-source STIR framework** (#2656) M. E. Strugari[1,2], C. Falcon[3], K. Erlandsson[4], B. Hutton[4], G. A. Reid[5], I. R. Pottie[6,7], S. Darvesh[5,8], S. D. Beyea[1,9], K. D. Brewer[1,9], K. Thielemans[4,10]
7:25 PM	STIR-03	**Python-based STIR Reconstruction Pipeline for NeuroLF Brain PET** (#2627) M. Jehl[1], E. Mikhaylova[1], K. Thielemans[4,2], D. Deidda[3], M. Ahnen[1], J. Fischer[1]
7:45 PM	STIR-04	**Connecting STIR and the SIMIND Monte Carlo Simulator** (#2645) R. Gillen[1,2], S. D. Porter[1], M. Ljungberg[3], K. Thielemans[1]
8:05 PM	STIR-05	**PET Raw Data Standardisation and the role of OSS** K. Thielemans
8:20 PM	STIR-06	**STIR Status and Future Functionality** K. Thielemans[a], D. Deidda[b], N. Efthimiou[c], C. Tsoumpas[d]
8:35 PM	STIR-07	**Discussion** C. Tsoumpas University of Groningen, Medical Imaging Center, Department of Nuclear Medicine & Molecular Imaging, University Medical Center Groningen, Groningen, Netherlands

Other work using STIR at MIC

- MIC-04-199 – **Integration of advanced 3D SPECT modelling for pinhole collimators into the open-source STIR framework**, *Strugari et al*
- MIC-04-208 – **Clinical assessment of Triple Modality Image Reconstruction using Yttrium-90 PET-SPECT-CT**, *Deidda et al*
- MIC-12-092 – **Probabilistic Volumetric Positioning of Annihilation Photons in Monolithic Crystals for Positron Emission Tomography**, *Dao et al*
- MIC-17-066 – **Simulated NEMA NU2 Performance of the Ultra-Compact Clinical NeuroLF Brain PET**, *Mikhaylova et al*

Other work using STIR at MIC via SIRF

- MIC-04-196 – **Deep Image Prior PET Reconstruction using a SIRF-Based Objective,** *Singh et al*
- MIC-17-216 – **Effect of prior smoothing parameter on the convergence of a Quasi-Newton and proximal algorithm**, *Porter et al*
- MIC-04-106 – **Optimization of a Stationary Tomographic MBI System Including Non-Local Means Filtering**, *Erlandsson et al*
- MIC-04-241 – **MLAA–performance for reconstructing MR hardware μ -maps from non-TOF and TOF emission data**, *Jurjew et al*
- MIC-17-237 – **Air Fraction Correction in PET Imaging of Lung Disease - Kernel Determination**, *Leek et al*

Acknowledgments

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Synergistic PET-MR Reconstruction

EPSRC

Thanks to the *IEEE NSS-MIC* organizing committee and particularly to **Ralf Engels**

IEEE

Program

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