



STIR: 15th Users' and Developers' workshop 2024

Nikos Efthimiou, Danniell Deidda

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 an "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
- 2021 — Virtual
- 2022 – Milan
- 2023 — Vancouver
- **2024 — Tampa**



Program



18:30	STIR-01	Welcome and Introduction (#2883) <u>N. Efthimiou</u> ¹ ¹ Harvard Medical School, Boston, United States of America
18:35	STIR-02	Enhancing SIMIND-SIRF Integration for Improved SPECT Modeling and Reconstruction using Residual Correction Principles (#2807) <u>S. D. Porter</u> ¹ , D. Deidda ² , K. Thielemans ¹ , R. Gillen ¹
18:50	STIR-03	GPU Accelerated Time-of-Flight PET Reconstructions via STIR Integration of Parallelproj (#2810) <u>N. Jurjew</u> ¹ , D. Atkinson ² , K. Thielemans ^{1, 3}
19:05	STIR-04	3D SPECT modelling integration for channel-edge pinhole collimators into the open-source STIR framework (#2815) <u>T. Ferri</u> ^{1, 2} , K. Thielemans ^{3, 4} , C. Fiorini ^{1, 2}
19:20	STIR-05	Out of the Lab and Into the Market - Preliminary Evaluation of STIR for Commercial SPECT Reconstruction Software (#2829) <u>S. Manwell</u> ¹ , D. Deidda ²
19:35	STIR-06	Respiratory motion correction of PET/MR data using SIRF (#2834) <u>P. Clegg</u> ¹ , C. Kolbitsch ² , K. Thielemans ³
19:50	STIR-07	STIR status and future functionality (#2882) <u>K. Thielemans</u> ¹ ¹ University College London, London, United Kingdom
20:10	STIR-08	Discussion

Other works:

N-20-06 – A prototype multi-instrument quality assurance system for responsive nuclear fuel manufacturing (#1905)

A. Parker, M. Bandala, P. Chard, N. Cockbain, D. Dunphy, D. Eaves, D. Hutchinson, X. Ma, S. Marshall, P. Murray, P. **Stirzaker**, J. Taylor, J. Zabalza, M. J. Joyce

Session: N-20 - Neutron and Gamma ray Imaging

Date: Thursday, 31 October, 2024, 9:30

Location: 120 & 121 ()

M-20-02 – System Design and Validation for Treatment Monitoring for BNCT by using Tomographic Reconstruction (#1858)

T. Ferri, A. Caracciolo, G. Borghi, S. Altieri, N. Protti, K. Thielemans, M. Carminati, C. Fiorini

Session: M-20 - Advanced instrumentation and computation for image-based therapy verification and dosimetry

Date: Saturday, 2 November, 2024, 10:38

Location: Ballroom A ()

M-03-169 – GUM-based Uncertainty Estimation in Unsupervised Deep Learning PET Image Reconstruction (#1904)

D. Deidda, A. Fenwick, K. M. Ferreira, A. P. Robinson, I. Singh, K. Thielemans

Session: M-03 - MIC Poster Session

Date: Wednesday, 30 October, 2024, 14:00

Location: East / Central Hall ()

M-03-223 – Using MLAA and registration to estimate attenuation of a flexible body matrix coil in nonTOF PET/MRI (#2118)

N. Jurjew, P. Schleyer, M. Teimoorisichani, C. Anderson, M. Rega, A. Mackenzie, D. Atkinson, K. Thielemans

Session: M-03 - MIC Poster Session

Date: Wednesday, 30 October, 2024, 14:00

Location: East / Central Hall ()

M-08-107 – Performance evaluation of S-PET, a compact, high sensitivity and high resolution small animal PET prototype (#1437)

H. Yang, W. He, X. Zhao, G. Li, Y. Zhao, W. Huang, Y. Huang, M. Niu, Y. Liang, Z. Gu

Session: M-08 - MIC Poster Session

Date: Thursday, 31 October, 2024, 14:00

Location: East / Central Hall ()

M-17-180 – Optimising Subset Selection in Synergistic Emission Tomography Reconstruction (#2183)

S. D. Porter, D. Deidda, S. Arridge, K. Thielemans

Session: M-17 - MIC Poster Session

Date: Friday, 1 November, 2024, 16:20

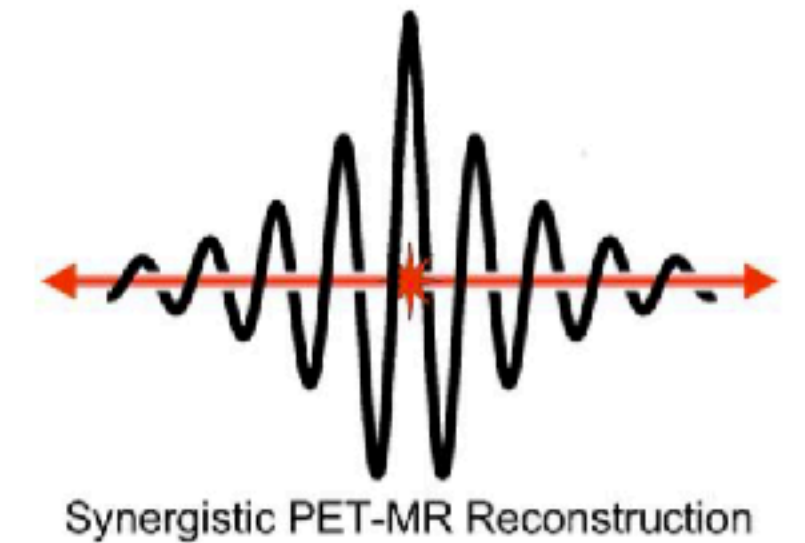
Location: East / Central Hall ()



Acknowledgements

Dinner discounted thanks to Kris Thielemans and EPSRC
CCP-SyneRBI

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



EPSRC



Program



18:30	STIR-01	Welcome and Introduction (#2883) <u>N. Efthimiou</u> ¹ ¹ Harvard Medical School, Boston, United States of America
18:35	STIR-02	Enhancing SIMIND-SIRF Integration for Improved SPECT Modeling and Reconstruction using Residual Correction Principles (#2807) <u>S. D. Porter</u> ¹ , D. Deidda ² , K. Thielemans ¹ , R. Gillen ¹
18:50	STIR-03	GPU Accelerated Time-of-Flight PET Reconstructions via STIR Integration of Parallelproj (#2810) <u>N. Jurjew</u> ¹ , D. Atkinson ² , K. Thielemans ^{1, 3}
19:05	STIR-04	3D SPECT modelling integration for channel-edge pinhole collimators into the open-source STIR framework (#2815) <u>T. Ferri</u> ^{1, 2} , K. Thielemans ^{3, 4} , C. Fiorini ^{1, 2}
19:20	STIR-05	Out of the Lab and Into the Market - Preliminary Evaluation of STIR for Commercial SPECT Reconstruction Software (#2829) <u>S. Manwell</u> ¹ , D. Deidda ²
19:35	STIR-06	Respiratory motion correction of PET/MR data using SIRF (#2834) <u>P. Clegg</u> ¹ , C. Kolbitsch ² , K. Thielemans ³
19:50	STIR-07	STIR status and future functionality (#2882) <u>K. Thielemans</u> ¹ ¹ University College London, London, United Kingdom
20:10	STIR-08	Discussion