

Venue: TP1303 -Image processing and machine learning Lab

Prof. S.Malarvizhi

- BRNS funded project titled “Real time hardware based Raw Data processing for dual energy X-ray Baggage Inspection System (XBIS)”, **Sanction No:** 34/14/07/2017-BRNS/34282 received **Sanctioned amount:** Rs. 23, 95, 650/- in Duration: 2017-21. The Principal Investigator **Dr.S.Malarvizhi** , **Co-PI Dr. P. Vijayakumar and principal collaborator Dr. Anita Topkar.** The objective of the project to developed standalone hardware for real time x-ray baggage security scanning system.
- Xilinx NEXUS is an innovative program of SRMIST from the grants received from Xilinx, Inc., focused on the funding of Women in Technology (WIT) programs within the university setting. Awardees of WIT 2021 are Dr. S. Malarvizhi, Professor of ECE, and Dr. Revathi Venkatraman Chair of School of Computing and Dr. Shantanu Patil , Head of Department of Translational- Medicine-And-Research and Associate Director, Innovation, Incubation & Entrepreneurship Center SRM IST. Grant of the award is USD 16000.

Equipment details:

Room Number	Location	Number of Units & Name
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Image Processing and Machine Learning (Funded by BRNS and Xilinx)	TP1303A	<ul style="list-style-type: none"> • Workstation(Intel i7-8700, 64 GB RAM, 500 GB • SSD, RTX 2080Ti-11GB Graphics card) • Workstation(Intel i7-8700, 64 GB RAM, 4 TB • HDD, Asus RTX 2080Ti-11GB Graphics card) • Workstation (Intel i7, 7th Generation, 32 GB • RAM,1 TB HDD) • PYNQ Z1 boards • Zynq UltraScale+ MPSoC ZCU104 Kit • Nvidia Jetson Nano • 10 PYNQ Z2 boards • PYNQ-ZU (Zynq Ultra scale) boards • Alveo U55C Data centre Accelerator card • 10 Vivado ML Enterprise Edition 2021.2 license
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Research Activites and publications:

1. Hardware accelerator boards for data processing.
2. Deep learning based solution to explosive detection system and its implementation in hardware.
3. GUI development to be deployed in the current system of BRNS.
4. Development of breast cancer detection system.
5. Six publications listed below:

Sl.NO	Publications
1.	S.Malarvizhi et al., Detection of sharp objects using deep neural network based object detection algorithm. In 2020 4th International Conference on Computer, Communication and Signal Processing (ICCCSP), pp.1-5, IEEE. ICCSP49186 .2020.9315272. DOI: https://doi.org/ 10.1109/
2	S.Malarvizhi et al., A Raw Data Processing Using Modern Hardware for Inspection of Objects In X-Ray Baggage Inspection Systems,

	IEEE Transaction on Nuclear Science, pp. 1-11, 2021. SCI-1.679, https://doi.org/10.1109/TNS.2021.3075256
3	S.Malarvizhi et al, Raw data processing techniques for material classification of objects in dual energy X-ray baggage inspection systems, Radiation physics and chemistry, pp. 109512, 2021. SCI-2.226, https://doi.org/10.1016/j.radphyschem.221.109512
4	S.Malarvizhi et al, Evaluating one stage detector architecture of convolutional neural network for threat object detection using X-ray baggage security imaging. Revue d'IntelligenceArtificielle, Vol.34, No.4, pp.495-500. sep-2020,Scopus-0.256, https://doi.org/10.18280/ria.340415
5	S.Malarvizhi et al, 2022. Automated Detection of Threat Materials in X-Ray Baggage Inspection Systems (XBISs). IEEE Transactions on Nuclear Science, 69(8), pp.1923-1930.
6	S. Malarvizhi et al, 2022, September. Implementation and Hardware Acceleration of Wiener filter algorithm using Vivado High Level Synthesis HLS for X-ray baggage Images. In Journal of Physics: Conference Series (Vol. 2335, No. 1, p. 012041). IOP Publishing.