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Pediatric Brain MR Images: Development of a Hybrid Deep Learning Generative Model



Presenter: Ms. Vicky Beharry

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Time: 10:00 am

Zoom Link:

[https://sta-uwi-
edu.zoom.us/j/99954334147?pwd=sL9qRsHU7MfFw
yUVFUCzsi4Y9gKCb7.1](https://sta-uwi-edu.zoom.us/j/99954334147?pwd=sL9qRsHU7MfFwyUVFUCzsi4Y9gKCb7.1)

DEPARTMENT OF PHYSICS- SEMINAR SERIES

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ABSTRACT

In the Caribbean, cancers are the leading cause of death in children under 15 years of age with leukemia and cancers of the central nervous system accounting for approximately 58.6% of pediatric mortality rates in Trinidad. Research has suggested in recent years, with the constant improvement of technology, there is a constant need to improve the quality of the medical images obtained through image processing methods. Hence, merging physical attributes with data driven methods may yield appropriate and anatomically accurate medical images. This first seminar aims to propose a methodology to develop a hybrid deep learning model which can accurately generate paediatric brain magnetic resonance (MR) images using physical characteristics of an MR scanner. A thorough presentation of papers published globally will be done to provide a framework for this study. Our methodology incorporates the consideration of multiple Generative Adversarial Network (GAN) architectures for the generation of paediatric brain MR images and after evaluation, the best performing will be selected for further alteration. The selected algorithm may then be infused with the physical parameters: maximum current and slew rate and further evaluated. Additionally, we aim to evaluate the current paediatric medical imaging trends in MRI and CT (most popularly used imaging modalities in brain imaging) for Trinidad's public health care sector. This study has the potential to reduce the complexities of obtaining real datasets within the medical imaging field and further contribute to the research in Trinidad.