

Synopsis Seminar

Seminar Title	: Development of AI-aided Classification Framework for the Detection of Autism Spectrum Disorder using sMRI
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Venue	: Seminar Hall (EC-303)
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Abstract	: Neuroimaging has presented the avenue for fetching the inside information of the brain in a noninvasive manner. The utilization of neuroimaging has increased in a massive number for the diagnosis of various brain disorders. The prevalence of Autism Spectrum Disorder (ASD) over the globe has created a situation of trepidation among individuals. Its complex nature and hidden symptoms with unknown reasons of occurrence also make the situation more sensitive and perilous for the autistic population. Anatomical information of the brain has shown an atypical pattern in ASD compared with the non-ASD group. The utilization of Artificial Intelligence (AI) based frameworks over various applications and related fields including healthcare has significantly contributed towards solving the associated problems. AI-aided classification framework can assist doctors in its early detection of ASD, and it can help autistic people ameliorate their lifestyle. The smaller number of research works using Structural Magnetic Resonance Imaging (sMRI) compared to Functional Magnetic Resonance Imaging (fMRI) with AI-based approaches gives the motivation to develop the automated classification framework for the detection of ASD with sMRI scans. Hence, This dissertation has proposed majorly four major AI-aided classification frameworks for the detection of ASD utilizing sMRI modality. Apart from these four frameworks, this dissertation has proposed a novel approach for detecting the patients having comorbidities among the ASD group by incorporating an AI-aided classification framework with sMRI scans which has been found extremely less in the research literature. Among the proposed classification framework, Prediction Level Fusion of Vision Transformers (PF-ViTs) based network has shown an appreciative performance by achieving a better classification accuracy in detecting ASD compared to the sMRI-based state-of-the-art works.