

**Invitation to M.Tech. Thesis Defense of Achyuthanand K: August 18, 2022 (Thursday): 02:30 PM – 03:30 PM IST**

In Partial Fulfillment of the Requirements for the Degree of

**M.Tech. CB**

**Achyuthanand K (MT20207)**

Will defend her thesis

**Title: “Brain correlates of cognitive-behavioural manifestations in Autism Spectrum Disorder”**

IIIT-D Faculty and Students are invited

**Date: August 18,, 2022 (Thursday)  
Time:** **02.30 PM-03.30 PM IST**

**Meeting Link:** [**https://meet.google.com/gfx-dkws-rhk**](https://meet.google.com/gfx-dkws-rhk%20)

**Examiner: Internal:   Sonia Baloni Ray**

**External/~~Internal~~: Jainandra Shukla**

**Advisor: Mrinmoy Chakrabarty**

**Co-Advisor NA**

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**Abstract**

Autism spectrum disorder (ASD) is a construct used to describes a cluster of behavioural features that span a range of issues, e.g., decreased social-emotional reciprocity and non-verbal communication in social interactions such as avoiding eye contact, inability to process non-verbal social cues/gestures; stereotyped repetitive movements such as flapping arms, rocking side to side, twirling; narrow spectrum of interests of unusual intensity and focus as well as sensory dysregulation (hyper / hyposensitivity to sensory inputs). These atypical characteristics of behaviour pose various challenges to activities of daily life in ASD, which together manifest as different degrees of clinical severity in this population. The disorder pertains to the development of the brain and nervous system (neurodevelopmental), has a strong genetic underpinning, heterogenous in nature and its cognitive-behavioural features co-occur with other conditions (comorbidities), e.g., depression, anxiety which in turn have been shown to influence cognitive functions. Functional connections between the different underlying structures of the brain generate cognitive functions / behaviours and a wealth of literature has evidenced altered functional connectivity in ASD as compared to their neurotypical peers. However, the evidence is focused majorly on children and adolescents with ASD. The adult age bracket and the role of comorbidities in modulating the functional connectivity in ASD has relatively been overlooked. Given the neurodevelopmental nature of ASD and a high prevalence of psychiatric comorbidities in this population, investigating the functional connectivity in the adult ASD brain is therefore of relevance. This study explored the differences of seed-to-voxel, resting state functional connectivity within the brain of individuals with ASD and those typically developed (TD), independently and in association with the severity of the psychiatric comorbidity of depression using functional magnetic resonance imaging (fMRI) datasets from the Autism Brain Imaging Data Exchange (ABIDE) repository. Further, the association of the functional connectivity was studied with the severity of the clinical symptomatology in ASD and its interaction with the severity of depression. The results highlight differential functional connectivity of seeds identified in a few key biological neural networks of ASD, i.e., the default mode network, fronto-parietal network, affective salience network and dorsal attention network, with different regions of the brain. The results attempt mechanistic explanations of the adult ASD phenotype offering insights for future research and practice.