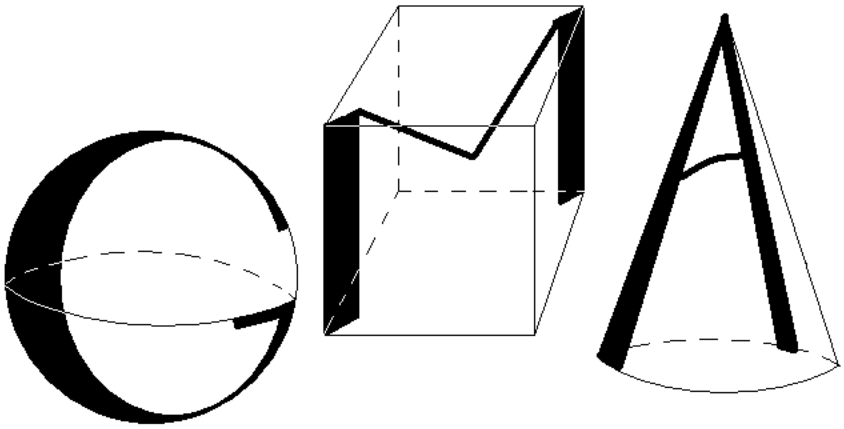

Colloquium

September 6, 4:05 p.m. (9^{th} Period)

(in the Atrium)

Speaker: Himanshu Yadav

Title: Topological Data Analysis with Point Cloud and Affine Subspaces: Preliminary Results and Challenges

Abstract

This presentation explores the concept of enhancing Topological Data Analysis (TDA) by incorporating affine subspace data for each point in a point cloud. Preliminary results demonstrate the potential benefits, including the ability to capture local geometric nuances, improve robustness to noisy data, and reveal intricate connectivity patterns. However, challenges are candidly discussed, such as selecting suitable metrics for quantifying surface relationships and inferring or estimating affine subspaces when not initially known. The presentation aims to showcase the innovative approach's potential while offering practical insights into the complexities of integrating affine subspaces data into TDA, even when the surface is unknown, benefiting researchers and practitioners in the field.