# Machine Learning Seminar

# Topological Machine Learning and Applications in Drug Discovery and Cancer Detection

**By**

## Baris Coskunuzer

**(University of Texas at Dallas)**

**Abstract:** In this talk, we'll introduce fundamental techniques in topological machine learning and showcase their application in two specific contexts. The first application is on computer-aided drug discovery, utilizing Multiparameter Persistence for graph representation learning. Our second application revolves around cancer detection from histopathological images via cubical persistence. We apply our methodologies across five distinct cancer types, demonstrating superior performance compared to state-of-the-art deep learning methods. The talk is accessible to graduate students in math, science, and engineering, assuming no prior background in topology or machine learning.

**Date:** December 11, 2023
**Time:** 16:30
**Place:** SA141 - Mathematics Seminar Room+ ZOOM