

**Workshop Title:** Unboxing Topological Data Analysis

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**Duration:** 2 hours

**Workshop Synopsis**

These days data sets are abundant, widely available in various forms and complexities. Data has shapes! If you can identify its shape, then a conclusive decision and prediction is feasible. Topological Data Analysis (TDA) is an advanced data analysis tool developed with strong mathematical foundations in search of data's patterns. In this workshop you will be exposed to the underlying principles of TDA. By the end of this workshop, TDA will be a transparent box preparing you for a journey towards data analysis with TDA software freely available in the Internet.

This 2-hour workshop will cover the following topics:

- 1) Bare basics: Set Theory, Group Theory & Various Spaces
- 2) Simplicial Complexes
- 3) Homology of Simplicial Complexes
- 4) Persistence Modules
- 5) Demo: TDA Software

**Objectives:**

- To elucidate the mathematical principles of Topological Data Analysis.
- To showcase the ability of Topological Data Analysis using Scikit-TDA and GUDHI software.

**Who should attend:**

This workshop is suitable for anyone interested in learning the underlying principles of Topological Data Analysis.

**Requirements:**

A demonstration with Python Jupyter notebook will be shown during the workshop.