Contribution ID: **33** Type: **not specified**

Harmonic Data Analysis for Shape and Centrality

Friday, 8 November 2019 10:40 (20 minutes)

Harmonic data analysis aims to provide topological and combinatorial summaries of data sets by representing them as simplicial complexes. Topological data analysis, which we shall review briefly, initiated a topological approach and introduced shape of data as a new data scientific feature. Recently, the need for simplicial complexes for data analysis arose again due to the emergence of simplicial networks for modeling higher order relations among data points, which requires both topological insight and combinatorial precision. In this talk, we will present methods from topological combinatorics for refining data shape via harmonic cycles and computing network centrality via simplicial effective conductance. Applications to medicine and social networks will be presented. We will also describe recent experiments in machine learning incorporating mathematical data summary.

Presenter: Prof. KOOK, Woong (Seoul National University)

Session Classification: Invited talks - Math & Stats 2