

# Application of TDA/TDA mapper to Biological Data

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Topological Data Analysis (TDA) is an area that deals with application of topological tools in understanding a data,  $X$ , by analyzing its “shape”. TDA mapper is an algorithm used to visualize and analyze data that live in higher dimensional space. TDA mapper is applied to a dataset,  $X$ , equipped with a filter function  $f$  from  $X$  to  $\mathbf{R}$ . The output of the algorithm is an abstract graph (or simplicial complex). The abstract graph captures topological and geometric information of the underlying space of  $X$ . I will discuss about two ongoing projects. The first project is analyzing BBS data, a data about bird species, migration, route, and so on, from topological point of view. That is, I will discuss about how TDA/TDA mapper can be applied to the BBS data. The second project is similar; the only difference is the data being analyzed. I will discuss about how TDA/TDA mapper can be applied to a data of vegetation, water quality, fish population, and so on.