



Contribution ID: 12

Type: **not specified**

Antifragile Persistent Homology using Fisher Information

Wednesday, June 29, 2022 11:00 AM (1 hour)

Antifragility is a property of systems in which they increase their capability to thrive in the presence of volatility and noise. I will present how persistent homology can be made adaptive by learning the optimal filtration that is resilient to noise in data. This is done by maximizing the Fisher Information among a variational family of filtration parameters using gradient descent. By doing so, we construct an informative persistence diagram and consequently, a compressed summary of the input data that is sensitive to the input parameters. I will illustrate this with a few examples and compare the performance with the other standard filtrations.

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