Adversarial change point detection

Change point detection has a long history dating back to at least the World War II, and is currently going through a renaissance due to the advances in technology and challenges in handling new data types. Adversarial learning has become increasingly popular in the last few years due to the frequent malicious cyber attacks. In this project, we aim to propose a theoretically-justified and computationally-efficient adversarial change point detection methods.

This will be built on the existing change point detection (e.g. Wang et al., 2018b) and adversarial learning literature (e.g. Pensia et al., 2019). This project can be as simple as directly wrapping up the methods in Section 3 in Wang et al. (2018b) and the shorth estimator results in Pensia et al. (2019). This will serve as starting point of a comprehensive Ph.D. thesis, consisting of adversarial change point detection in covariance (e.g. Wang et al., 2017), in stochastic block models (e.g. Wang et al., 2018a), in random dot product graph models (e.g. Padilla et al., 2019a) and in nonparametric settings (e.g. Padilla et al., 2019b,c).

I prefer students who are strong in mathematics.

References

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