



Πανεπιστήμιο Κύπρου
Τμήμα Μαθηματικών
και Στατιστικής

ΠΡΟΣΚΛΗΣΗ

Το Τμήμα Μαθηματικών και Στατιστικής
του Πανεπιστημίου Κύπρου
σας προσκαλεί σε ανοικτή διάλεξη,
με ομιλητή τον

Καθηγητή Γιάννη Γιατράκο
Yau Mathematical Sciences Center,
Tsinghua University

με θέμα

Limitations of the Wasserstein MDE for univariate data

Abstract

Minimum Kolmogorov and Wasserstein distance estimates, θ_{MKD} and θ_{MWD} , respectively, of model parameter, $\theta(\in\Theta)$, are empirically compared, obtained assuming the model is intractable. For the Cauchy and Lognormal models, simulations indicate both estimates have expected values nearly θ , but θ_{MKD} has in all repetitions of the experiments smaller SD than θ_{MWD} , and θ_{MKD} 's relative efficiency with respect to θ_{MWD} improves as the sample size, n , increases. The minimum expected Kolmogorov distance estimate, θ_{MKD} , has eventually bias and SD both smaller than the corresponding Wasserstein estimate, θ_{MWD} and θ_{MKD} 's relative efficiency improves as n increases. These results hold also for stable models with stability index $\alpha = .5$ and $\alpha = 1.1$. For the Uniform and the Normal models, the estimates have similar performance. The disturbing empirical findings for θ_{MWD} are due to the unboundedness and non-robustness of the Wasserstein distance and the heavy tails of the underlying univariate models. Theoretical confirmation is provided for stable models with $1 < \alpha < 2$, which have finite first moment. Similar results are expected to hold for multivariate heavy tail models. Combined with existing results in the literature, the findings do not support the use of Wasserstein distance in statistical inference, especially for intractable and Black Box models with unverifiable heavy tails.

Η διάλεξη θα πραγματοποιηθεί την Τετάρτη, 16 Νοεμβρίου 2022,
και ώρα 15:00, στην αίθουσα 038-ΘΕΕ01
στην Πανεπιστημιούπολη.

Η διάλεξη είναι ανοικτή στο κοινό.