The Hong Kong University of Science and Technology

Seminar on Business Data Science

Department of ISOM

Gaussian Random Field Approximation via Stein's Method, with Applications to Wide Random Neural Networks

by

Prof. Nathan ROSS

University of Melbourne

Date: October 23, 2024 (Wednesday)

Time: 11:00am – 12:00pm

Venue: Case Room G001 (LSK Business Building)

Abstract

We describe a general technique to derive bounds for Gaussian random field approximation with respect to a Wasserstein transport distance in function space, equipped with the supremum metric. The technique combines Stein's method and infinite dimensional Gaussian smoothing, and we apply it to derive bounds on Gaussian approximations of wide random neural networks of any depth. The bounds are explicit in the widths and natural parameters of the neural network. The talk covers joint works with Krishnakumar Balasubramanian, Larry Goldstein, and Adil Salim; and A.D. Barbour and Guangqu Zheng.

Bio

Nathan Ross is an associate professor in the School of Mathematics and Statistics at the University of Melbourne, where he has been since 2013. Before coming to Melbourne, he was a postdoc in the Department of Statistics at the University of California, Berkeley, and received his PhD from the University of Southern California. His research is focused on understanding the behavior of random structures that are related to modern statistical applications, such as random networks.

All interested are welcome!
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