香 港 中 文 大 學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

ITCSC Seminar

The trace reconstruction problem

By
Dr. Lee Chin Ho
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December 12, 2024, Thursday

10:30am – 11:30 am

Room 404, 4/F, William MW Mong Engineering Building, CUHK

Abstract:

The trace reconstruction problem asks to reconstruct an unknown n-bit string x given independent random "traces" of x, where a random trace is obtained by first deleting each bit of x independently with some probability (say 0.5), and then outputting the concatenation of the remaining bits of x. A basic question is to determine the number of traces required to reconstruct x (with high probability). Despite many efforts, this question remains largely open. In particular, the best known upper bound is $\exp(\sim O(n^{1/5}))$, while the best known lower bound is barely superlinear.

In this talk, I will survey several recent results on this problem and its variants, and highlight its connections to the study of the extremal properties of Littlewood polynomials on complex disks.

Biography:

Dr. Chin Ho Lee is an assistant professor at the Computer Science Department of North Carolina State University. Before joining NCSU, he was a postdoc at Harvard University from 2021-2023 and Columbia University from 2019-2021. He received his PhD at Northeastern University, and his Masters and Bachelor at the Chinese University of Hong Kong (CUHK).

***** ALL ARE WELCOME *****

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