

THE CHINESE UNIVERSITY OF HONG KONG Department of Information Engineering Seminar

Learning from Networked Examples and Novel Concentration Inequalities By Dr. Yuyi WANG CRRC Lambda Lab, China & UK

Date : 30 May 2024 (Thursday) Time : 4:00pm – 5:00pm

Venue : Rm 801, Ho Sin Hang Engineering Building, CUHK

<u>Abstract</u>

Many machine learning algorithms are built on the assumption that training examples are drawn independently. However, this assumption breaks down when learning from a networked sample, where two or more training examples may share common objects and, consequently, the features of these shared objects. We demonstrate that the conventional approach of ignoring this issue can potentially impair the accuracy of statistical results. To address this, we explore alternative methods. One approach is to use independent examples, discarding all other information exclusively. However, this approach is clearly suboptimal. We analyze sample error bounds in this networked context, yielding significantly improved results. A crucial component of our method involves efficient sample weighting schemes, which lead to the development of novel concentration inequalities.

Biography

Dr. Wang Yuyi received his dual PhD from ETH Zurich and KU Leuven. He is currently the Chief Scientist in Algorithms at CRRC, where he leads the CRRC Lambda Lab - Intelligence and Algorithm Lab, with locations in both China and the UK. His research interests include machine learning, algorithm design, and their innovative applications, particularly in graph network data. Dr. Wang has published over sixty papers in the fields of algorithms and artificial intelligence. His work has appeared in prestigious journals such as PRL, JMLR, and AIJ, as well as in top-tier conferences like FOCS, LICS, and NeurIPS. Dr. Wang has co-supervised more than ten doctoral students.

** ALL ARE WELCOME **

Host: Prof. VONTOBEL Pascal O. (Tel: 3943-8390, Email: <u>pascal.vontobel@ie.cuhk.edu.hk</u>) Enquiries: Information Engineering Dept., CUHK (Tel.: 3943-8385)