

The Hong Kong University of Science and Technology
Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics
Joint Seminar Announcement



**Adaptivity and Confounding in Nonstationary
Bandit Experiments**
by
Prof Daniel Russo
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Decision, Risk, and Operations Division
Columbia Business School**

Date : **9 December 2022 (Friday)**
Time : **10:30 – 11:45 AM**
Zoom ID : **[978 2332 0242](#) (passcode 370129)**



Abstract: We explore a new model of bandit experiments where a potentially nonstationary sequence of contexts influences arms' performance. Context-unaware algorithms risk confounding while those that perform correct inference face information delays. Our main insight is that an algorithm we call deconfounded Thompson sampling strikes a delicate balance between adaptivity and robustness. Its adaptivity leads to optimal efficiency properties in easy stationary instances, but it displays surprising resilience in hard nonstationary ones which cause other adaptive algorithms to fail.

Bio: Prof Daniel Russo is a Philip H. Geier Jr. Associate Professor in the Decision, Risk, and Operations Division of Columbia Business School. His research lies at the intersection of statistical machine learning and online decision making, mostly falling under the broad umbrella of reinforcement learning. Outside academia, he works with Spotify to apply reinforcement learning style models to audio recommendations.

His research has been recognized by the Frederick W. Lanchester Prize, a Junior Faculty Interest Group Best Paper Award, and first place in the George Nicholson Student Paper Competition. He currently serves as an Associate Editor at Management Science and Stochastic Systems. Prior to joining Columbia, he one year as an Assistant Professor in the MEDS department at Northwestern's Kellogg School of Management and one year at Microsoft Research in New England as Postdoctoral Researcher. He received his PhD from Stanford University in 2015, where he was advised by Benjamin Van Roy. In 2011 he received his BS in Mathematics and Economics from the University of Michigan.

All interested are welcome!
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