

DEPARTMENT OF STATISTICS

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KNG: A New Mechanism for Data Privacy

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11:45am - 12:45pm

Light refreshments will be served

110 Frelinghuysen Road

Hill Center, Room 552

Abstract: In this presentation we consider a new mechanism for achieving Differential Privacy called KNG. Two of the most popular methods, the exponential mechanism and objective perturbation, have had great success, but still have several drawbacks that can range from minor to severe depending on the setting. Recently it was shown that the exponential mechanism is not asymptotically efficient, introducing too much noise, and thus reducing statistical utility quite broadly. Conversely, objective perturbation enjoys excellent utility, but can be difficult to generalize and requires strong structural assumptions. We show how our new approach, KNG, assuages nearly all of these issues; it is nearly as easy to implement as the exponential mechanism, but has much better asymptotic properties. We highlight how KNG agrees with well known mechanisms in simpler settings, while using its framework to develop new privacy tools in more complicated settings such as linear and quantile regression.

Bio: Dr. Reimherr graduated with his Ph.D. in Statistics from the University of Chicago in 2013. He received an M.S. in Statistics and B.S. in Mathematics from the University of Utah. He was the recipient of the Canadian Journal of Statistics Award, the University of Chicago Harper Dissertation Fellowship, named a Simons-Berkeley Research Fellow, and received the Noether Young Scholar Award from the American Statistical Association in 2019. Reimherr's work focusses on functional and longitudinal data analysis, with recent extensions to data privacy and shape analysis.

