



SEMINAR NOTICE



1. Title: Efficient Graph Sampling for Estimation and Inference of Massive Networks
2. Name and Affiliation: Dr. Chul-Ho Lee, Assistant Professor,
Electrical and Computer Engineering, Florida Institute of Technology
3. Date, Time and Venue : 2017.08.30. 17:00 ~ 18:00, ENGR9-521
4. Target Audience: KNU Professors, Graduate students
5. Hosted by: BK21+ SW Human Resource Development Program for Supporting Smart Life

ABSTRACT:

Recent years have witnessed that online social networks (OSNs) change the way people interact with each other and trigger a tremendous amount of attention in various disciplines because of their extensive applications and massive useful data. Today's OSNs have hundreds of millions to more than a billion users. They are simply too large to be downloaded or stored locally, and the sheer size forces us to resort to 'sampling' for estimation and inference in a compact manner. In particular, sampling via random-walk crawling has been commonly considered as the only viable solution for estimating the properties of users, their relationships and more sophisticated relationship among multiple users, since it is only feasible via the public yet restrictive local-neighborhood-only access interfaces provided by OSNs and also supported by the well-established theory of Markov Chain Monte Carlo (MCMC) methods. The standard MCMC or random walk-based methods, however, inherently suffer from the sluggish nature of random walks and the slow-mixing structure of social graphs, thereby leading to high correlation in the samples obtained and thus high estimation error.

In this talk, I will introduce our research efforts to tackle the sampling inefficiency problem that is prevalent in the widely used random walk-based methods, including the celebrated Metropolis-Hastings algorithm. Our fruitful approaches have been to better design the trajectory of random-walk crawlers, exploiting the past or history information on already-visited nodes, and to construct efficient sampling estimators, which can be incorporated with any random walk crawlers, so as to achieve smaller correlation and thus higher sampling accuracy.

BIOGRAPHY:

Chul-Ho Lee is currently an Assistant Professor in the Department of Electrical and Computer Engineering at Florida Institute of Technology, Melbourne, FL, USA. Prior to joining Florida Tech in August 2015, he worked as a senior engineer with the DMC R&D Center, Samsung Electronics, and as a postdoctoral research scholar with the Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, USA, where he received the Ph.D. degree in Computer Engineering in 2012. His research interests lie in the field of networking, network science, network data analysis, and mobile computing. He has published more than 25 peer-reviewed papers and most of them have appeared in top-tier venues such as ACM SIGMETRICS, IEEE INFOCOM, IEEE SECON, IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, and IEEE Transactions on Parallel and Distributed Systems.

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