
Electrical & Computer Engineering
S E M I N A R
Louisiana State University

**Partition of Random Items: Tradeoff
between Binning Utility, Meta Information
Leakage and Hypotheses Distinguishability**

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Abstract—In this talk, we will present a novel framework to understand the tradeoff between binning utility, meta information leakage and hypotheses distinguishability. More specifically, under the proposed framework, we formulate two constrained optimization problems. In the first problem, the goal is to maximize the binning utility while restraining a certain level of information leakage. In the second problem, the goal is to maximize the binning utility while maintaining a lower bound for the measure of distinguishability between two hypotheses and an upper bound for the level of information leakage. Both problems are NP-hard by nature because we are seeking an optimal allocation of M random items into N bins. Such problems (where optimization is carried out over a diverse but yet dependent series of sets) are formally known as multi-agent multi-variate optimization problems. We develop suboptimal solutions to exploit potential sub-modular structures of the problems based upon sufficient conditions found on the payoff functions in the underlying objective functions. Further numerical results are presented to demonstrate the effectiveness of the proposed sub-modular function based algorithms.

Bio—Farhang Bayat received the B.Sc. and M.Sc. degrees in electrical engineering from Amirkabir University of Technology, Tehran, Iran, in 2012 and 2014, respectively and is currently pursuing the Ph.D. degree in the Division of ECE of the School of EECS at Louisiana State University, Baton Rouge. His research interests include information theory and its applications in privacy protection in communication networks and graphical models.

When: Thursday, 4 April 2019, 12:30 - 13:30
Where: Room 3285 Patrick F. Taylor Hall
Info: <https://www.lsu.edu/eng/ece/seminar>
Food: *Pizza, cookies, and soft drinks will be served.*

