



THE UNIVERSITY OF
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Deep Poisson Factor Modeling

MONDAY, October 19, 2015, at 4:00 PM

Eckhart 133, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

We propose a new deep architecture for topic modeling, based on Poisson Factor Analysis (PFA) modules. The model is composed of a Poisson distribution to model observed vectors of counts, as well as a deep hierarchy of hidden binary units. Rather than using logistic functions to characterize the probability that a latent binary unit is on, we employ a Bernoulli-Poisson link, which allows PFA modules to be used repeatedly in the deep architecture. We also describe an approach to build discriminative topic models, by adapting PFA modules. We derive efficient inference via MCMC and stochastic variational methods that scale with the number of non-zeros in the data and binary units, yielding significant efficiency relative to models based on logistic links. Experiments on several corpora demonstrate the advantages of our model when compared to related deep models.