



## **Deep Learning Program Opening Workshop August 12-16, 2019**

### **SPEAKER TITLES/ABSTRACTS**

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“Deep Models for Improved Topic Recovery”

We introduce a new method for detecting latent hierarchical structure in data based on non-negative matrix factorization. Datasets with hierarchical structure arise in fields as diverse as document classification, image processing, and bioinformatics. Our method recursively applies topic modeling in layers to discover overarching topics encompassing the lower-layer features. By computing the general form of the derivative of the function that defines the relationship between the layers, we derive a backwards propagation scheme, thus framing our method as a neural network. We test our method on a synthetic and real data; numerical results demonstrate the efficacy and promise of our method.