1128-90-300   **Rishabh K Iyer*** (`rishi@microsoft.com`). *Submodular Optimization and Data Summarization with Applications to Computer Vision.*

Visual Data in the form of Images and Videos have been growing at an unprecedented rate in the last few years. Moreover, today, machine generated videos (via Drones, Dash-cams, Body-cams, Security cameras etc.) are being generated at a rate higher than what we as humans can process, and majority of this data is plagued with redundancy. In this talk, I will present a unified framework for Submodular Optimization which provides an end to end solution to these problems. We first show that submodular functions naturally model notions of diversity, coverage and representation. Moreover they also lend themselves to practical and provably near optimal algorithms for optimization, thereby providing practical data summarization strategies. We then show the utility of these for image collection summarization and video summarization, and show how we can extract key vignettes and events from large videos and image collections, considerably reducing human effort in analyzing these. Finally, we also discuss applications of the summarization framework to training data subset selection and active learning for several image and video recognition tasks, thereby reducing the training complexity and human labeling effort and cost. (Received February 28, 2017)