Modeling Network User Behavior: Probabilistic Programming and Beyond

Abstract

This project involves learning from a user’s historical email records, to predict the user’s future mobility in networks. This topological mobility, as opposed to physical mobility, can be substantial as the user switches from LTE to wireless network, while moving minimally physically. We chose email records as they document a user’s location in networks via IP addresses. Prediction for online mobility is of particular interest to the networks community, as it is useful in determining how newly conceived networks should have their storage system designed. We used various approaches and techniques to model the user's behavior, including probabilistic programming, regression, neural nets, clustering, etc. We compare and contrast the effectiveness of each.