"Using Social Network Data to Identify Job Seeking Behavior"

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From

Columbia

יום שני, 28 באוקטובר 2013, בשעה 14:00
סמינרון 0105, בניין אירוסו-לאזרד, הקמפוס המרכז הבינתחומי, רחוב כנפי נשרים, הרצליה

Abstract

LinkedIn is the largest professional social network in the world. One of the key motivations for members to use LinkedIn is professional networking and job seeking. At the same time, one of LinkedIn's primary revenue sources comes from targeting job seekers. One of the key challenges for LinkedIn is to identify job seekers, as most job seekers will not publicly announce they are seeking for a job. However, job seeking behavior can be indirectly observed through how job seekers use LinkedIn. For instance, relative to members who are not job seeking, a job seeker may exhibit more engaged behavior in the social network site such as more frequently updating her profile, searching for companies or trying to grow her social network by inviting new members to her personal network. Furthermore, a job seeker or a member who is planning to seek for a job, may exhibit increased activity on the social networking site compared to her own behavior in previous periods. In this research we use longitudinal individual-level social network activity data from a large sample of LinkedIn members to identify job seekers. We build a hidden Markov model (HMM) in which the different states correspond to different levels of job seeking,
where each state is characterized by a multivariate set of behaviors in the social network site. The model allows us to identify the members’ activities on LinkedIn that most likely reflect their job seeking status. We use the model to predict the likelihood of each member’s job seeking status at any point in time. In addition to the longitudinal social network activity data we leverage a two-wave large-scale survey asking members directly about their job seeking status. Hence, in some time periods, and for some users, we observe their “true” job seeking status. We use the HMM to capture the dynamics in job seeking behavior as well as fuse the survey data with the longitudinal social network activity in a natural way. We explore various approaches to merge these two sources of data and discuss the merits of augmenting longitudinal data with one-shot surveys. We demonstrate that the proposed model can help LinkedIn not only predict which members are likely to be job seeking at any point in time, but also what activities on the social network site are associated with job search and how long the members have been job seeking.