

## Chapter XV

# Unraveling the Taste Fabric of Social Networks

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### ABSTRACT

Popular online social networks such as Friendster and MySpace do more than simply reveal the superficial structure of social connectedness — the rich meanings bottled within social network profiles themselves imply deeper patterns of culture and taste. If these latent semantic fabrics of taste could be harvested formally, the resultant resource would afford completely novel ways for representing and reasoning about web users and people in general. This paper narrates the theory and technique of such a feat — the natural language text of 100,000 social network profiles were captured, mapped into a diverse ontology of music, books, films, foods, etc., and machine learning was applied to infer a semantic fabric of taste. Taste fabrics bring us closer to improvisa-

tional manipulations of meaning, and afford us at least three semantic functions — the creation of semantically flexible user representations, cross-domain taste-based recommendation, and the computation of taste-similarity between people — whose use cases are demonstrated within the context of three applications — the InterestMap, Ambient Semantics, and IdentityMirror. Finally, we evaluate the quality of the taste fabrics, and distill from this research reusable methodologies and techniques of consequence to the semantic mining and Semantic Web communities.

### INTRODUCTION

Recently, an online social network phenomenon has swept over the Web — MySpace, Friendster,

Orkut, thefacebook, LinkedIn — and the signs say that social networks are here to stay; they constitute the *social Semantic Web*. Few could have imagined it — tens of millions of Web users joining these social network sites, listing openly their online friends and enlisting offline ones too, and more often than not, specifying in great detail and with apparent exhibitionism tidbits about who they are, what music they listen to, what films they fancy. Erstwhile, computer scientists were struggling to extract user profiles by scraping personal homepages, but now, the extraction task is greatly simplified. Not only do self-described personal social network profiles avail greater detail about a user's interests than a homepage, but on the three most popular sites, these interests are distributed across a greater spectrum of interests such as books, music, films, television shows, foods, sports, passions, profession, etc. Furthermore, the presentation of these user interests is greatly condensed. Whereas interests are sprinkled across hard-to-parse natural language text on personal homepages, the prevailing convention on social network profiles sees interests given as punctuation-delimited keywords and keyphrases (see examples of profiles in Figure 1), sorted by interest genres.

It could be argued that online social networks reflect — with a great degree of insight — the social and cultural order of offline society in general, though we readily concede that not all social segments are fairly represented. Notwithstanding, social network profiles are still a goldmine of information about people and socialization. Much computational research has aimed to understand and model the surface connectedness and social clustering of people within online social network through the application of graph theory to friend-relationships (Wasserman, 1994; Jensen & Neville, 2002; McCallum, Corrada-Emmanuel, & Wang, 2005); ethnographers are finding these networks new resources for studying social behavior in-the-wild. Online social networks have also implemented site features that allow persons

to be searched or matched with others on the basis of shared interest keywords.

**Liminal semantics.** However, the full depth of the semantics contained within social network profiles has been under-explored. This paper narrates one such deep semantic exploration of social network profiles. Under the keyword mediation scheme, a person who likes “rock climbing” will miss the opportunity to be connected with a friend-of-a-friend (foaf) who likes “wakeboarding” because keyword-based search is vulnerable to the *semantic gap* problem. We envision that persons who like “rock climbing” and “wakeboarding” should be matched on the basis of them both enjoying common *ethoi* (characteristics) such as “sense of adventure,” “outdoor sports,” “and “thrill seeking.” A critic might at this point suggest that this could all be achieved through the semantic mediation of an organizing ontology in which both “rock climbing” and “wakeboarding” are subordinate to the common governor, “outdoor sports.” While we agree that *a priori* ontologies can mediate, and in fact they play a part in this paper's research, there are subtler examples where *a priori* ontologies would always fail. For example, consider that “rock climbing,” “yoga,” the food “sushi,” the music of “Mozart,” and the books of “Ralph Waldo Emerson” all have something in common. But we cannot expect *a priori* ontologies to anticipate such ephemeral affinities between these items. The common threads that weave these items have the qualities of being liminal (barely perceptible), affective (emotional), and exhibit shared identity, culture, and taste. In short, these items are held together by a liminal semantic force field, and united they constitute a *taste ethos*.

**What is a taste ethos?** A taste ethos is an ephemeral clustering of interests from the taste fabric. Later in this paper we will formally explain and justify inferring a taste fabric from social network profiles, but for now, it suffices to say that the taste fabric is an  $n$  by  $n$  correlation matrix, for all  $n$  interest items mentioned or implied on a

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