

Exploiting Familiar Strangers: creating a community content distribution network by co-located individuals

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Introduction

Our urban cities are traditionally places of anonymity: places where 'no one knows your name'. Such conurbations provide a wider choice of people with whom we can choose to be acquainted and consequently, as the locus of our social life moves away from the neighbourhood, we lose the connections necessary to disseminate local news, raise issues and gauge views within our local communities. This decay of neighbourliness is further exasperated by the absence of a city 'sidewalk life', the serendipitous contact between neighbours, corner shops and passers-by which reinforces a neighbourhood identity. Without such a safe and convenient means of maintaining a public life amidst the anonymity of the city, the urbanite has only two choices; they must enlarge their private lives to encompass their neighbours or withdraw from such contact altogether. Jacobs [1] argues that within modern cities, casual public contact elicits a sense of identity, trust and respect within a community, and that where these casual contacts fail, individuals become increasingly isolated from their neighbours. Gehl [2] also interprets these casual encounters as necessary to the health of a community: *'these contacts appear insignificant, yet they are valuable both as independent contact forms and as prerequisites for other, more complex interactions'*.

In the early 1970's, Stanley Milgram performed a small study to investigate a phenomenon he called '*Familiar Strangers*'. Milgram defined a familiar stranger as someone who is observed, repeatedly for a certain time period and without any interaction [3]. Familiar strangers are common throughout our urban existence: for example, commuters that we recognise at the bus stop or the old man who walks his dog in the morning. It is our hypothesis that familiar strangers are in fact an emergent property of the movement and temporal patterns of any modern city. Despite the outward appearance of chaotic motion, the behaviours of urban inhabitants possess strong temporal, spatial and intentional patterns. For example, travelling to work in the morning (rush-hour being a common manifestation of this behaviour), meeting friends at a cafe or picking up the children from school. Deeper, contextual connections may also exist between those who frequent certain areas, such as where there are clusters of specific service industries or the stratification of retail outlets (e.g. budget stores often occupy different areas to those store that cater to fashionable or niche markets). Because the meaning of 'familiar stranger' is subjective, and highly dependant on the observations of the individual, we describe this phenomenon as *co-location*.

Discovering and Representing Relationships

Given the fact that co-location is dependent on an almost subconscious awareness of regular encounters with other individuals within the environment, automated mechanisms are necessary for recording and identifying these encounters. Personal area networks, such as Bluetooth, are capable of detecting co-location encounters [7] and given the widespread of blue-tooth devices in the environment (through mobile phones and PDAs), provide an ideal technological platform for the automated discovery of these relationships. This discovery is dependent on knowledge and the representation of the location, time of day (with respect to the individual's personal schedule), and duration of the co-location event. Numerous online social networking services have recently emerged [4] to cater for every conceivable relationship we have, or may desire in the future (although they usually focus on business introductions and romantic relationships). Users are typically cognizant of the types of relationships modeled by these services and they express them with a minimum of contextual information (e.g. (Fred *knows* Sally), (Dave *worksFor* BigCorp)). Ontologies such as FOAF [5] and RELATIONSHIP [6] support this simplified, binary representation of the overt relationships within our lives but they are unable to model the contextual information (such as spatial and temporal properties) arising from repeated co-location encounters. In addition, co-location does not involve explicit and intentional interactions on behalf of the participants and, consequently, individuals may find it extremely difficult to articulate these relationships.

Future Work and Conclusion

A key aspect of our research is the construction of data-mining systems to extract, and describe, the meaningful relationships hidden among the high ratio of noise (i.e., strangers) within in the co-location data. Co-location data can contain at least three different classes of encounters: 1) casual or random encounters; 2) co-location encounters that represent familiar strangers; and 3) conventional social network encounters (e.g. between friends [5,8] and colleagues [9]). Data-mining and statistical techniques can be used to identify and eliminate casual encounters, leaving encounters that represent some form of social relationship. Friend and colleague relationships may be identified from a number of sources, such as more traditional social networking tools, or from personal sources such as electronic address books. As well as representing these relationships as FOAF properties, other social encounters may also be represented at community events, such as conferences, etc, and subsequently published on the Semantic Web. By eliminating these from the co-location events, a set of familiar-stranger based relationships can then be identified.

A study of the resulting co-location network (i.e., the social network formed by co-location relations) may help to reveal the prominent neighbourhood characters since public figures like shop keepers and bus drivers are probably co-located with a disproportionately large number of residents. Such individuals play an important role as hubs that may collect and share community information. The transient connection that exists between co-located devices can also be exploited to disseminate content across the co-location network. We can envisage various types of useful content distributed in this manner; for example, photos of recent community events such as school fetes and plays, news stories, gossip, or reviews of local services. By publishing content in this way, individuals can maintain a small public presence within their local neighbourhood without breaking the established code of urban anonymity or resorting to the global audience afforded by the Internet.

Acknowledgements

This work is supported under the Advanced Knowledge Technologies (AKT, <http://www.aktors.org/>) Interdisciplinary Research Collaboration (IRC), which is sponsored by the UK Engineering and Physical Sciences Research Council under grant number GR/N15764/01.

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