

# Making use of Insignificant Interactions

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Information dissemination within human societies is highly determined by the type of social relationships between its members. Strong relationships tend to create social cliques and concentrate knowledge whereas weak links foster serendipity at the expense of specificity. In his seminal paper, Mark Granovetter [1] described the importance of weak social relationships in the search for a new job, yet he disregarded "[social] *ties without substantial significance, such as a 'nodding' relationship between people living on the same street, or the tie to the vendor from whom one customarily buys a morning newspaper*". Conventional social relationships fail to capture the incidental interactions that exist between weakly cohesive social groups. Peer-based wireless networks facilitate the exploration of these localised social ties without any explicit intentional behaviour on behalf of the participants. This proposal presents a plausible method to utilise these almost non-existent and seemingly insignificant, social interactions to disseminate localised information and allow us to explore the patterns in daily life.

Regular patterns of co-location between pairs of individuals may imply that a common demographic, or shared interest exists between them. For example, the girl that you recognise on your bus several times a week works at your university and the investment banker who walks past you every day actually lives around the corner. Whilst these seem like trivial relationships in the context of traditional social networks, could they be used to disseminate information? To explore this hypothesis, mechanisms that capture subtle unconscious social interactions can be used to create an alternative content distribution network that exploits previously hidden social structures.

Devices have already been explored that marry ubiquitous computing and our own social interactions. For example, Meme Tags [2] allowed participants at a conference to share small snippets of text, whereas the Sociometer [3] attempted to measure the face-to-face interactions between people to discover social relationships. Such devices rely on relatively stable, face-to-face interactions between people. In contrast, the work described here is more concerned with the weaker notion of repeated transient interaction over a longer period of time.

The technology necessary to discover and harness this network lies with short-range radio technologies, such as Bluetooth, which are now becoming pervasive within PDAs and mobile phones. The wireless bubbles surrounding these devices can log our encounters with other individuals and thus create a significant database of

co-location information. The choice of wireless technology can greatly affect the degree of interaction captured. For example, the time taken to establish a connection restricts the captured relationships to those with some persistence (e.g., people sitting on a bus or in an office) whereas rapid handshakes may enable information dissemination with casual encounters (e.g., passing someone on the street). Bandwidth constraints also limit the volume of information which can be passed between peers. This may necessitate intelligent negotiation to ensure that high quality, relevant information is received. Conversely, the strength of the relationship can affect the quality of the shared information.

This interaction network represents an open environment where any information can flow and therefore the content must be described with sufficient semantic detail to allow interoperability between arbitrary nodes. Existing Semantic Web technologies may be applicable to this problem, although it is expected that they will not prove entirely sufficient due to the dynamic nature of the network.

Finally, the potential diversity and volume of data collected requires the design of ambient user interfaces to present the information in an interesting, engaging and unobtrusive manner.

This project, whilst embryonic, explores possible mechanisms that utilise the most trivial social interactions for disseminating information and revealing the patterns that lurk within our daily lives. It builds upon previous work in the areas of socially-oriented, pervasive computing applications but aims to investigate much weaker relationships within a substantially larger community.

## Bibliography

- [1] Granovetter, M. The Strength of Weak Ties, American Journal of Sociology, vol. 78, no. 6.
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