Rhodes University

Computer Science Department

Honours Project Proposal

Identifying direct relatives of a social network site user and obtaining their personal contact details

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February 27, 2015

Problem Statement

Usage of social media has steadily grown in the past few years [1]. A problem brought about by this is the amount of online harassment on social media sites, more specifically, anonymous social media sites. There are very few ways to solve this problem due to the advantage of anonymity but a possible solution to this would be to use freely available information on these sites and connecting sites to identify the harasser and their close family members in order to make them aware of what the harasser has done; a colloquial term for this is "Doxx-ing".

Research Objective

The purpose of this project is to develop a web browser add-on to identify direct relatives of a social network site user and obtain their personal contact details. Within this research; the terms add-on and web browser add-on will be used interchangeably; the terms user and social network site user will also be used interchangeably.

Research Approach

In order to identify relatives of a social network site user, a social network graph will need to be mapped and traversed using graph theory as well as using graph heuristics to determine relationships and the closeness of two users. Graphs are extensively used to model social structures based on different kinds of relationships between people or groups of people. Barriers, such as privacy settings or the accuracy of information, to this approach could become problematic when graphing the social network. These barriers could invalidate the social network graph or mislead the traversing of the graph.

The social network site in which this project will initially be focusing on is Facebook. However, if time allows, a possible extension the this project would be to integrate information from multiple social network sites such as Twitter or LinkedIn.

Background

A web browser add-on is a small program designed to extend the base functionality of a web browser by modifying or enhancing its features [2] [3]. However add-ons are browser specific; so for example you can get a Firefox Extension or a Google Chrome App. Add-ons are usually found on the browser specific web store controlled by the browser creators, although, add-ons can be downloaded and installed manually. Developing a browser add-on to achieve the research objective is a convenient process due to how browser add-ons are integrated into the web browser giving direct access to the necessary data. This allows for two possible routes of development; a client-server based development, or a client only based development using Javascript.

A direct relative can mean spouses, parents, grandparents, uncles, aunts, children, siblings, nieces, or nephews; whether by blood, adoption, or marriage. A subsection of direct relatives, called immediate relatives, are those who are related within one jump from the specified person.

Social network sites are web-based services that allow individuals to create a public profile, to create a list of users with whom to share connections, and view and cross the connections within the system [4]. So a social network site user is broad term used to describe anyone with an online account for any social network site such as Facebook, Twitter or LinkedIn. This can be a person of any age, race or origin.

Personal contact details is a set of information about an individual that may include his/her name, address, email address, phone number, age, sex, race, etc. However the information this project will focus on is the individuals contact information, any piece of information which can be used to communicate with said individual; whether that is a phone number, email address or even their Facebook profile.

"Graphs are discrete structures consisting of vertices and edges that connect these vertices" [5]. Graphs can be used to model many different problems, with many types of graphs available being used depending on the constraints of edges, such as edges looping back to a vertex. Social network graphs are a specific type of graph used to represent social structures based on the kinds of relationships between people. "In these graph models, individuals are represented by vertices; relationships between individuals are represented by edges" [5], as can be seen in Figure 1. There are two main algorithms available to traverse a graph; a depth-first search or a breadth-first search.

Figure 1: An Acquaintanceship Graph [5]
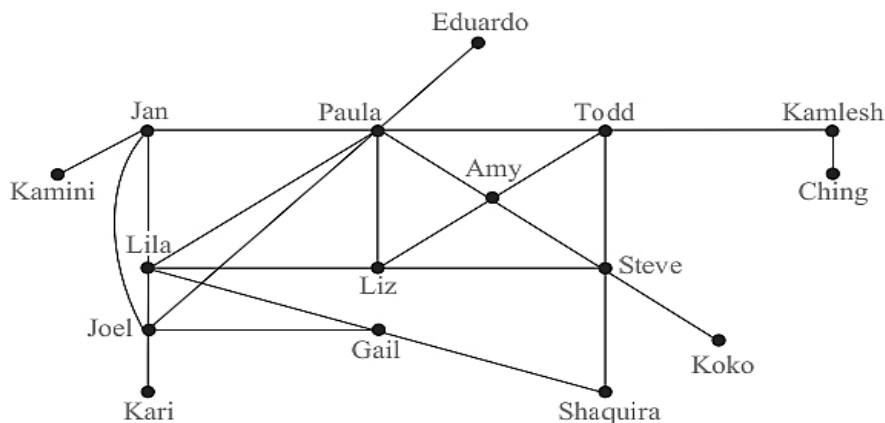
Research Timetable

Tues 03rd Mar	Seminar 1
Fri 29th May	Literature Review and Plan of Action
Tues 28th July	Seminar 2
Mon 14th Sep	Short Paper
Mon 26th Oct	Seminar 3
Fri 30th Oct	Project Deadline
Fri 06th Nov	Research Website

References

[1] Statista, "Statistics and facts about social networks." `http://www.statista.com/topics/1164/social-networks/`, Feb 25 2015.

[2] Google, "What are extensions?." `https://developer.chrome.com/extensions`, Feb 25 2015.

[3] Mozilla, "Using add-ons." `https://addons.mozilla.org/en-us/faq`, Feb 25 2015.

[4] D. Boyd and N. Ellison, "Social network sites: Definition, history, and scholarship," *Journal of Computer-Mediated Communication*, vol. 13, no. 1, pp. 210–230, 2007.

[5] R. K.H., *Discrete Mathematics and Its Applications*. McGraw-Hill, 7th edition ed., 2012.