Managing Privacy in Photos and Videos in Social Media Applications

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Declaration of Authorship

I, Srinivas R Madhisetty, declare that this thesis is submitted to fulfill the requirements for the award of Doctor of Philosophy, in the Faculty of Engineering and Information Technology at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution.

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Abstract

Privacy protection can be attributed primarily to a change in the nature and size of threats to privacy partly attributed to the rapid technological change. Unprecedented use of technology such as surveillance, social media recording, storage, and retrieval of information have made it difficult for individuals to retain and maintain levels of privacy that was once enjoyed before extensive use of such technologies. "Traditional expectations of privacy with regards to the gathering and processing of personal data are increasingly difficult to" maintain in the new environment[1].

This research developed a conceptual model for managing privacy when photos and videos are exchanged via social media. What is considered as sensitive for privacy reasons varies from individual to individual. For example, when a document is shared the exchange of information is grounded to a specific context. Such contextual grounding may not be explicitly present when a photo or a video is shared because a photo or a video may have tacit information embedded in it. Information which is not explicit but is stored in a photo or a video that disclose unintended information is called tacit information in this thesis.

It is difficult to gauge the loss of privacy if a photo or a video contains sensitive information which is tacit in nature and if such information is shared.

By sharing such a photo or a video, it may result in harm to the individual’s privacy. Harm, could be understood as a loss of reputation in this thesis. As social media transmits such photos and videos to others, this makes the management of the published content’s privacy difficult.

Social media applications like Facebook, Twitter, WhatsApp and many more applications are becoming popular. The instant sharing of information via photos and videos is making the management of privacy more difficult. There is a lack of awareness amongst users of social media that the content they published could be used against them or in ways which they did not intend when they first published the content.
A state of reasonable privacy is achieved through trust and negotiation with other parties, often with the implicit expectation that the information shared will not be used or shared without the content owner’s consent. However, when users upload content, they may lose the control of the content they provided.

The objective of this research is to determine how photos and videos can be securely stored and retrieved by identifying how to manage key sensitive information? In photos and videos.

Identifying sensitive information in a photo or a video is a major problem for people who use social media, therefore rather than making assumptions about what is sensitive in a photo or a video, this research asked a group of study participants why they share content and what concerns they have. This enabled inferences to be made about categories of sensitivity in accordance with the participants’ responses.

This research uses particular words such as ‘sensitive’, ‘managed’, ‘privacy’. Deﬁning these terms is difficult because what is considered as sensitive or managed or privacy to one person may be different from another. This research rather than deﬁning or scoping these terms in a particular context, it asked participants what ‘sensitive’, ‘management’ and ‘privacy’ mean to them.

The latter part of this thesis develops a new conceptual framework based on how participants believe privacy could be managed. Interviews were conducted, the interview responses were collated and analyzed using Grounded Theory. A major theme and three sub-themes in which varying levels of privacy concerns were developed, and nine sub-categories that can be applied to the main theme and sub-themes. Key Performance Indicators (KPI’s) were developed for each theme. KPI’s are measures, for effective management of privacy for each theme. One of the contributions in this dissertation is a description of how the identiﬁed KPI’s are interrelated.

The conceptual framework produced can be used as an evaluation tool or an assessment tool for existing users of social media to ensure privacy to individuals who like to share photos and videos via social media.
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Abbreviations

CCTV  Closed Circuit Television
DOF   Depth Of Field
PET   Privacy Enhancing Technologies
GTM   Grounded Theory Method
ISO   International Organization for Standardization
KPI   Key Performance Indicators