THE CARNEGIE TRUST
FOR THE UNIVERSITIES OF SCOTLAND

Investigation Into Cyberstalking Risks and Prevention in Contemporary Cyberspace

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Stalking has been made easier and more dangerous by social media

Cyberstalking aids real-life stalking and enables online harassment

Stalking behaviours include[1]:

- Following
- Accosting
- Unwanted contact
- Unwanted phone calls
- Threatening family and pets

Cyberstalking includes[2][3]:

- Impersonation
- Identity theft
- Hacking
- Releasing personal information (Doxxing)
- Gathering information for stalking in real life

How can someone with an online presence prevent cyberstalking?

[1] https://www.ncjrs.gov/ovc_archives/academy/chap22-2.htm
[2] http://library.college.police.uk/docs/appref/Stalking-and-harassment-161118.pdf
[3] https://www.tripwire.com/state-of-security/security-awareness/what-cyberstalking-prevent/

Methodology

Fictious Target: 21-year-old female nursing student at the University of Manchester

Adversary: Stalker with average technical capability (not able to hack)

Target's profile built based on data from student Twitter accounts

Synthesised posts with content, locational information, people tagged and timestamps

Target's university is set to be the anchor point as it is known information

Analysed posts with location information at differing levels of detail (see right)

Simulated attacks using google maps to find the ideal posts: Interesting but not revealing location

Radial attack searches within 1000m of previous post or anchor point – shown right

Tag attack searches all posts with the same tag within 1000m from anchor point – not shown

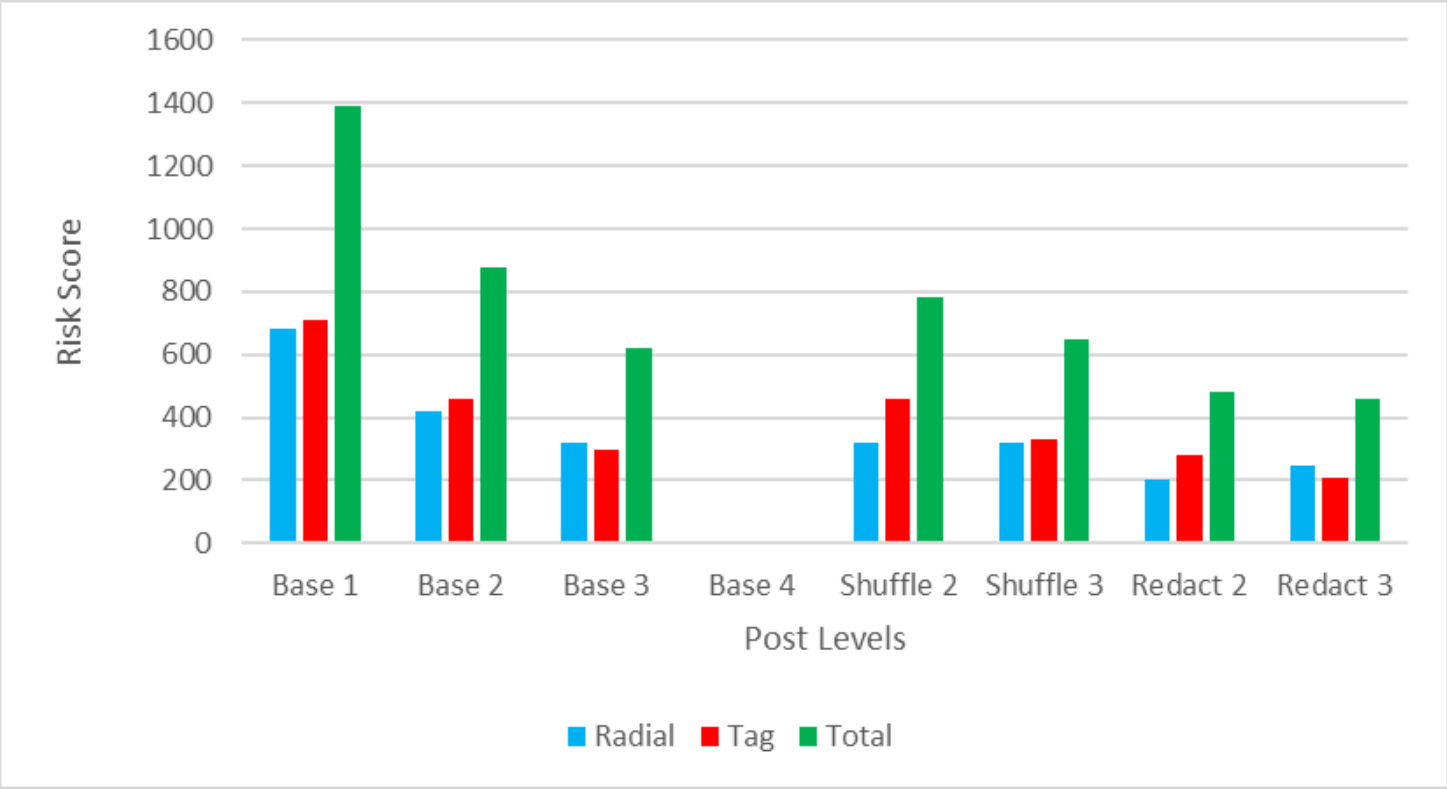
Created defensive models and simulated attacks on them:

- Shuffle model – Remove timestamps from posts and shuffle the order
- Redaction model – Remove posts from group which are deemed critical/high risk followed by med-high risk

All Restaurants (Level 3 post – vague description)

All Chinese Restaurants (Level 2 post – detailed description)

Yang Sing Restaurant (Level 1 post – exact location)



Base - No defensive model applied
Shuffle - Shuffle model applied
Redact - Redaction model applied

1 - Exact location
2 - Detailed description
3 - Vague description
4 - No locational information

Results

Each post given a risk level depending on how precisely the location was identified

Each group of posts given a score depending on the posts' risk levels

The Redaction model had lower risk than shuffle model

In addition to risk being lowered from removing posts, redaction model caused a knock-on effect, lowering risk of other posts

Redacting critical posts more effective than generalising posts

Further Recommendations

It is not necessary to make boring posts, more important to leave out crucial posts, and don't post as often

Integrate feature into social media apps to flag critical posts and suggest removal