Title: Public Perceptions of Privacy in Surveillance Camera Networks

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Improvements in computer vision techniques enable camera surveillance and video analytics systems to be deployed at larger and larger scales by automating data collection processes using visual footage. The negative implications on privacy may be obvious, but we should consider the question: do the observed individuals care? Why is this so, and what drives their perceptions towards these camera systems?

A wide body of literature claims that cultural and demographic factors play a strong role in determining perceptions of privacy. For example, it has been argued that women feel safer if there is camera surveillance to deter criminal attacks on them. However, it has also been argued that women are wary of camera surveillance because of the presence of unknown people watching them, and the implication of voyeuristic behaviour. In both cases, it is argued that women as a demographic group hold coherent or homogenous views, yet there is a clear contradiction between these two arguments.

In a mixed-methods survey with mostly New Zealand-based participants, we presented ten future-oriented surveillance camera scenarios to respondents and collected data about their views on privacy in each case. These scenarios were designed to cover a variety of different use cases, with a number of underlying factors in mind, such as different system owners, whether or not the footage was recorded, and if the use of artificial intelligence would allow humans to be removed from the loop or not. The scenario approach allows for a much deeper discussion about the different contextual elements that influence perceptions of privacy.

We quantitatively analysed the data to identify clusters of respondents and grouped them together based on how comfortable they felt about each scenario. This revealed four clusters, ranging from those that were relatively pro-camera to those who were consistently anti-camera. Importantly, almost all of our demographic groupings were distributed between all four clusters, indicating that underlying ideology and preferences play a far stronger role in determining privacy perception than demographics.

We also qualitatively analysed the written comments to identify the underlying drivers for those perceptions. The clusters were internally consistent with how they approached the different scenarios and allowed us to determine five main factors that drive perceptions of privacy. Understanding and addressing these factors will be important for those wanting to design ethical surveillance systems and maintain public confidence, as well as for those that want to identify the shortcomings of existing surveillance camera networks.