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Introduction

Online **photo sharing** has notoriously been a major **source of social conflict** since the broad adoption of Online Social Networks. Everyday **examples** of meddle-sharing include photo **subjects being shown**:

- as participants of demonstrations (at a gay parade, for example)
- as attendees of specific events (e.g. a convention of a political party)
- simply as having been at a certain place at a given time.

Such **photos can disclose information** about the subject that she would **usually not have revealed** to the noticing person. So a **way to express privacy preferences** to humans and machines **is needed**.

Problem Confinement

From a high-level perspective, we can distinguish at least generic classes of unwanted information revelations:

Unintentional discovery A person looking at a photo unintentionally recognizes a photo subject he already knows as being shown in a specific context.

Directed searchability Social networks and other photo sharing platforms offers possibility to explicitly and easily search for photos showing specific persons just by their name, Twitter ID etc.

Reverse searchability A person is identified through a reverse search, which enables the recognition of an unknown person from their picture through face recognition.

In all these cases, privacy concerns emerge if and when a person's ability to control their public image is impaired.

Acknowledgements

This concept was developed by a multitude of people of the expert platform *Internet & Society Collaboratory*. Besides the authors, significant contributions were made by (in alphabetical order): Thomas Heilmann, Jan Schallaböck, Max Senges and Gordon Süß. The proof-of-concept software was written by Markus Köbele.

Information & Downloads



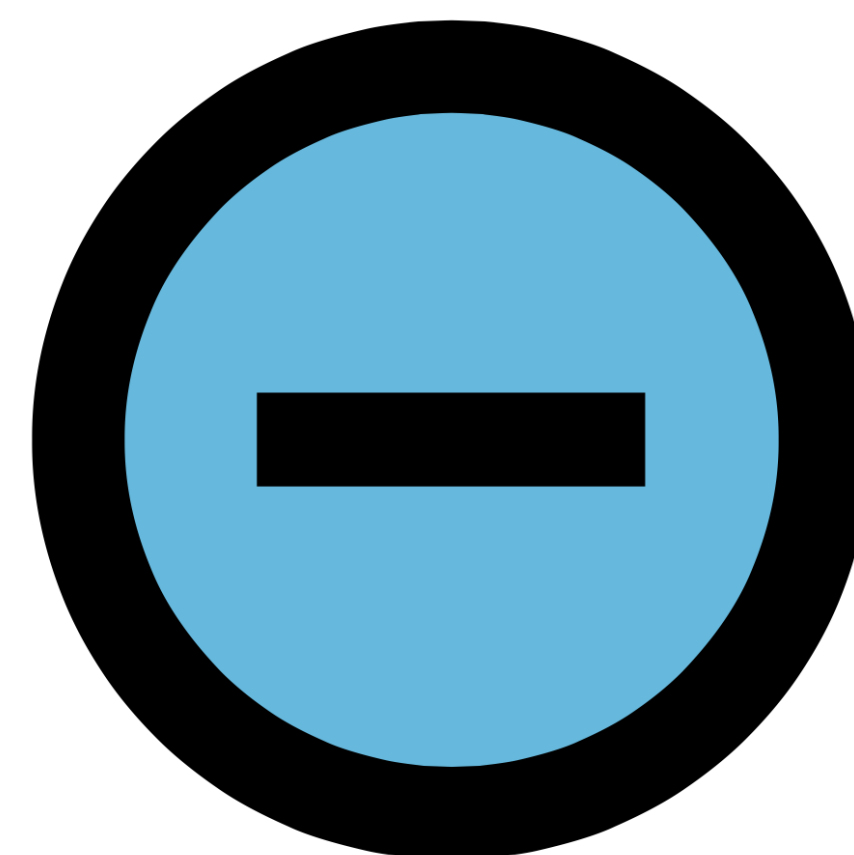
Further information and downloads of software and symbols are available at: <http://offlinetags.net>

Idea: The Four *Offlinetags*

Generally speaking, our approach is based on a **well-defined set of four symbols** that can, in the form of stickers, buttons, badges, etc., be **attached to the clothes** and represent the wearer's preferences on the desired handling of photos taken of him.



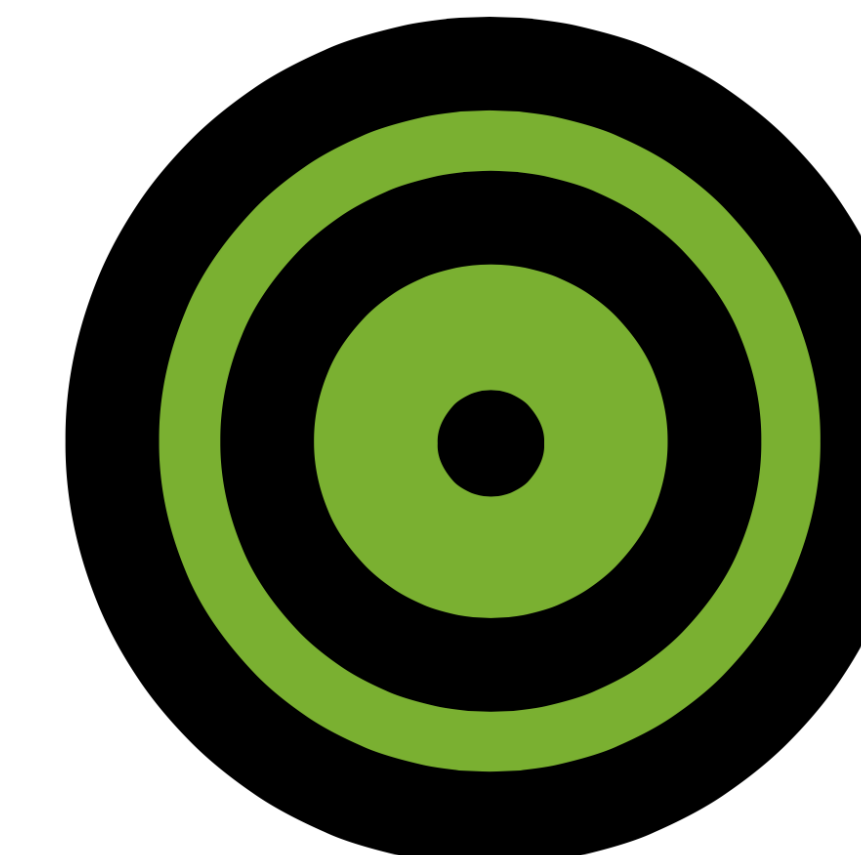
NoPhotos: Please refrain from taking pictures with me being depicted, no matter if I appear to be not recognizable.



BlurMe: Please ensure before uploading a picture of me, that I cannot be recognized by facial recognition algorithms.



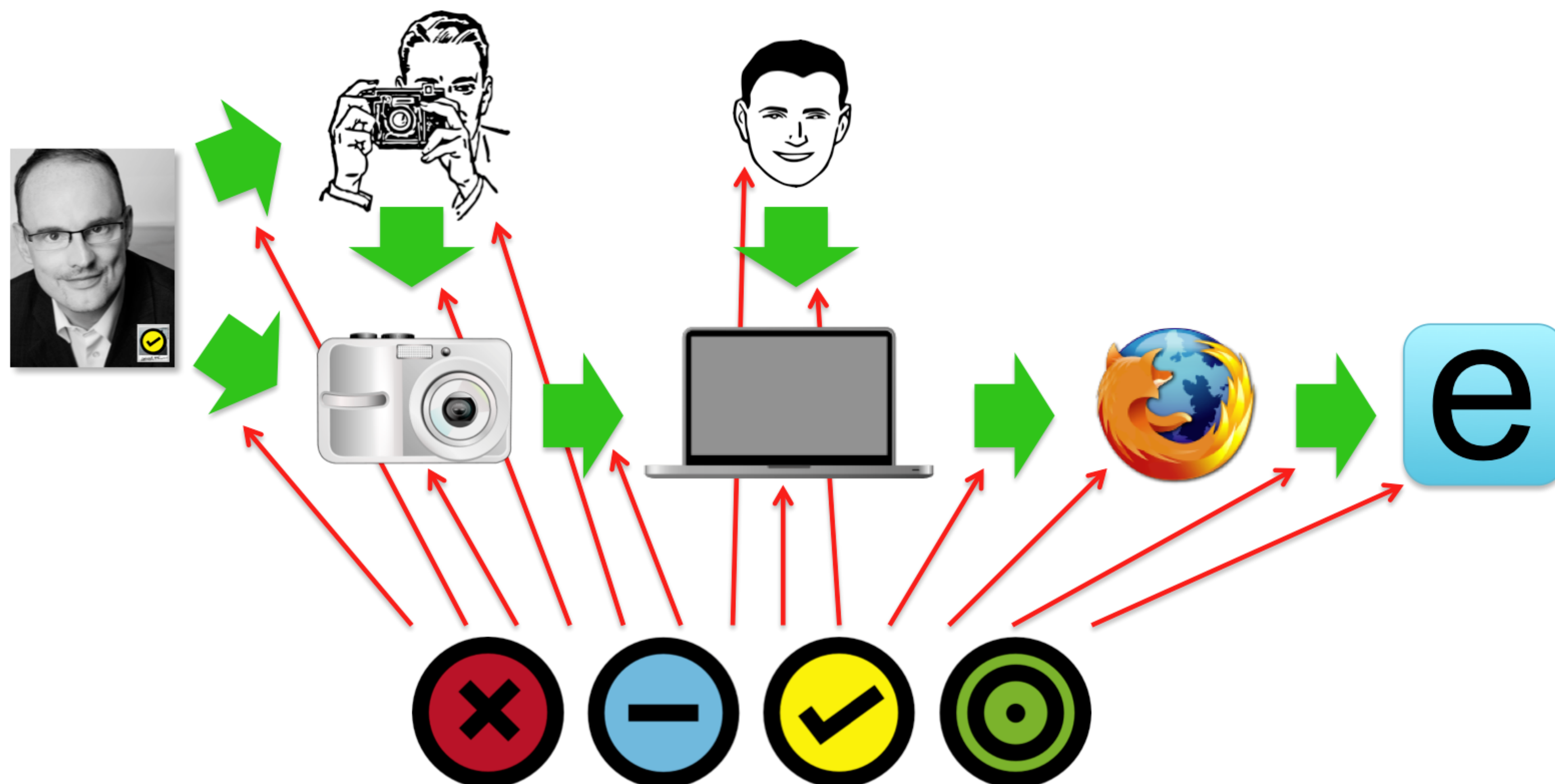
UploadMe: Feel free to upload and share pictures of me, but please refrain from tagging or facial recognition.



TagMe: Feel free to take pictures of me, upload them, tag them, and make them available for facial recognition.

Enforcement

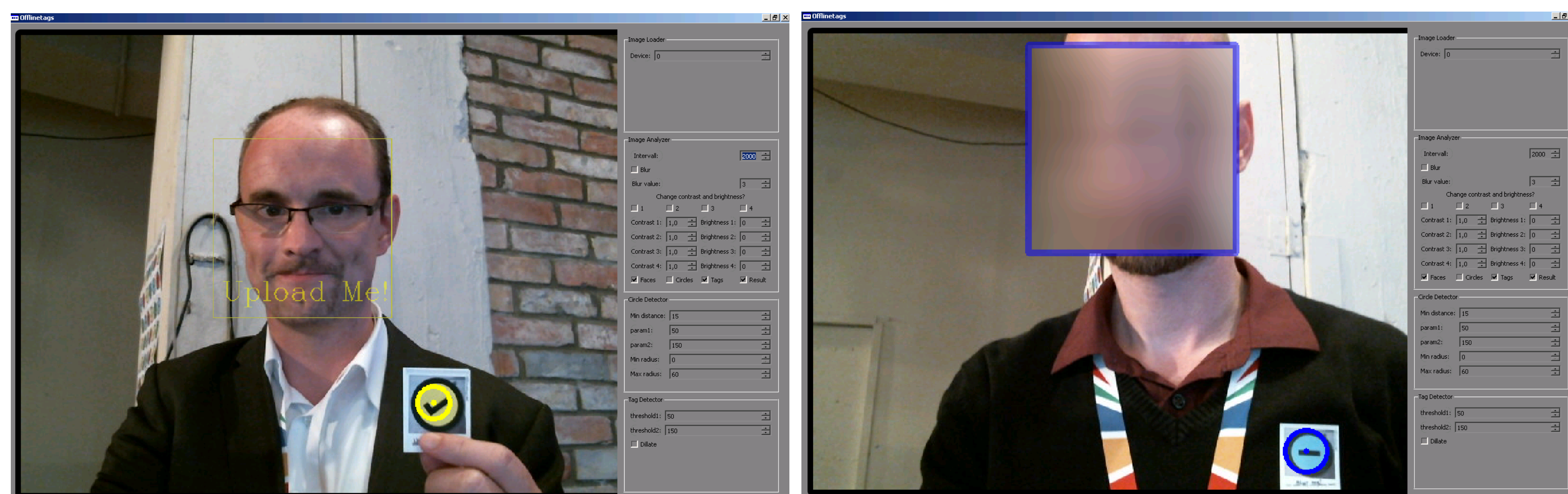
Human Readable: The intuitive design shall make those persons taking and handling the respective photos aware of the photo subjects' preferences.



Machine Readable: Offlinetags are easily recognizable by algorithms. This allows for automatic enforcement of the preferences at any point of the photo-sharing chain.

Prototype Implementation - It Works!

A prototype implementation based on OpenCV (opencv.org) shows that the recognition of tags and faces works very well. The software reacts in the intended manner on the recognized tags.



Left: UploadMe-Tag found and face recognized => the prototype shows the result in a frame around the detected face **Right:** BlurMe-Tag in the lower right corner detected and the recognized face instantly blurred