

Generating Secure Passwords from Personal Photo Albums

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Generating secure and usable passwords is a major challenge. Most users tend to choose passwords that are easy to remember and reuse, making it also easy for attackers to guess and compromise them.

An alternative to text-based passwords is the use of ‘graphical password schemes’: these ask the user to choose memorable images or click on a specific spot of an image that is only known to the user. Several studies have shown that most people are better at remembering images than texts. However, the main problem in using graphical passwords is the cost and effort that are required in maintaining a sufficiently large database of usable images. Further, the memorability and usability of graphical passwords are influenced not only by the visual characteristics of the images, but also by their *relevance* to the users.

To overcome these weaknesses, we propose an idea for choosing images from users’ *own* photo albums which should be more memorable than the ones selected randomly from the server’s database. When a user is asked to generate a password, the user would first type in a memorable keyword (e.g. place, event), and then select one image from a set of images returned from her own photo album based on this keyword (see Fig. 1). The image selected or the hash of its binary can then be used as the password. Unlike conventional graphical passwords, our scheme would not require any images to be stored on the server. Also, the user will find it easier to remember images selected from their own album.

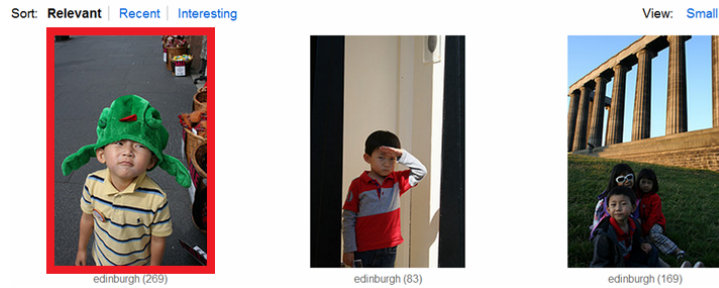


Fig. 1. An example of the proposed password generation. A user tries to choose an image with the keyword ‘Edinburgh’ from her photo collections.

Assuming that the keywords chosen by the users are uniformly distributed, our application should be robust against dictionary attacks. The best an attacker can do is to perform a brute-force search on the target user’s photo album, which should be fairly large. Our research plan is to conduct thorough user studies to evaluate both the security and usability of the proposed application.