Pass-thoughts: Authenticating with Our Minds

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1 Justification for Inclusion in NSPW

Our submission falls under the research paper category. In our paper, we present a new user authentication paradigm called *pass-thoughts*. Pass-thoughts (to our knowledge) is a novel idea for user authentication that makes use of recently developed Brain Computer Interface (BCI) technology. Recent advances in BCI technology indicate the potential for a new type of human-computer interaction: a user transmitting thoughts directly to a computer. We discuss how this new technology could be used for user authentication now and how it might be used in the future. If BCI technology can accurately record and process brain signals in a repeatable way, a pass-thought system might provide a quasi two-factor, changeable authentication method resilient to shoulder-surfing.

Pass-thoughts challenge user authentication practices and proposals to date. Pass-thoughts consider directly using our thoughts in conjunction with the innate uniqueness of our brains for user authentication. This differs from existing theory and practice of using either one-factor or two distinct factors for authentication. Unlike other biometric methods, pass-thoughts are still changeable and thus a stolen pass-thought would not compromise a user's privacy any more than a stolen password. Pass-thoughts are unobservable, addressing the new ever-present threat of recorded shoulder-surfing that is easily accomplished with ubiquitous cell phone cameras and wireless video cameras.

We believe that the New Security Paradigms Workshop is an ideal forum to present this idea as it is based on very recent (and anticipated) technological developments. Pass-thoughts also have controversial implications by the nature of its underlying BCI, a technology that has the potential for abuse (e.g. infringement of a user's privacy).

2 Attendance Statement

If accepted, the first and second authors would like to attend the workshop. If there is only room for one author, we would like the first author to attend.