**CAPTCHA - A NEW SECURITY**

**ABSTRACT**

Many security primitives are based on hard mathematical problems. Using hard AI problems for security is emerging as an exciting new paradigm, but has been under-explored. In this paper, we presented a new security primitive based on hard AI problems, namely, a novel family of graphical password systems built on top of captcha technology, which we call captcha as graphical password(caRP). caRP is both a captcha as graphical password scheme. caRP addresses a number of security problems altogether, such as online guessing attacks, relay attacks, and, if combined with dual-view technologies, shoulder-surfing attacks. Notably, a carp password can be found only probabilistically by automatic online guessing attacks even if the password is in the search set. caRP also offers a novel approach to address the well-known image hotspot problem in popular graphical password systems, such as PassPoints, that often leads to weak password choices. caRP is not a panacea, but it offers reasonable security and usability and appears to fit well with some practical applications for improving online security.