

## A SURVEY OF HUMAN INTERACTIVE PROOF SYSTEMS

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**ABSTRACT.** *Nowadays, a great amount of information is circulated through the Internet. Some of them exclusively belong to a special group of users and require protection and safeguarding against unauthorized access. To this end, a category of systems called HIP (Human Interactive Proof) are designed to distinguish between various groups of users. An important task on the Internet websites is registration. Some hackers write programs to make fake registration that waste the resources of the web sites or even stop them from providing services. Therefore, human users should be distinguished from computer programs. CAPTCHA (Completely Automatic Public Turing Test to Tell Computer and Human Apart) methods are one of the important branches of HIP systems which are used to distinguish between human users and computer programs automatically. These methods are based on Artificial Intelligence (AI) topics. The goal of these systems is to ask questions which human users can easily answer but current computer programs cannot. In this paper, HIP systems (mainly CAPTCHA methods) are surveyed. In addition to available HIP systems, various applications of HIP systems and attacks conduct on them are studied.*

**Keywords:** CAPTCHA (Completely automated public turing test to tell computers and human apart), HIP (Human interactive proof), OCR (Optical character recognition)

**1. Introduction.** Computers changed the human life in their short history. While it is less than three decades that have passed since the early personal computers have entered markets, now we are using computers for different applications.

The Internet is one of the important computer based technologies and concepts that has a significant impact on human societies. Many aspects of human life are affected by the expansion of the World-Wide Web (WWW) and many daily affairs from daily shopping to education and commerce can be done using the Internet. For example, web-based learning is growing during past years and it is one of the active research fields [46].

A common action which is done in most websites, especially the commercial websites, is to fill out registration forms for certain purposes. When the user filled out the forms by entering the required information, he/she is allowed to login into that website and use website services. Unfortunately, there are persons who abuse web services by writing programs which do automatic false registration in websites. These programs automatically fill out forms with incorrect information in order to enroll in the website and abuse the services which are provided for human users. This work wastes a large volume of the