

HOI POLLOI COMPUTING- A CONCEPTUAL FRAMEWORK

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ABSTRACT

Internet has been recognized as the network of networks. This technology enables users to conduct activities such as business transactions, management, social networking, and information sharing online. The amount of information available on Internet is enormous and can be contributed by many users. The empowerment to all users to provide and share information on the same platform gives the Internet abundant resources. In other words, it is the user participation that enriches the Internet experiences.

C.A.P.T.C.H.A (Completely Automated Public Turing Test To Tell Computers and Humans Apart) [2] is an application that filters spam bots from humans. Created in 2000 by Luis von Ahn, Manuel Blum, Nicholas Hopper and John Langford of Carnegie Mellon University, C.A.P.T.C.H.A was originally to be used for Yahoo. The process requires one to type in a series of distorted words in order to differentiate humans from the bots. The words are unreadable to bots but still recognizable to humans. However, the creator of C.A.P.T.C.H.A. realized that to solve a C.A.P.T.C.H.A., it took 10 seconds. When you add all the time people spend to solve C.A.P.T.C.H.A., it totaled up to an astronomical amount of hours. At the same time he was working with various Internet libraries to transcribe old books into online digital format. The problem was that some of these old books were not scanning properly because the words were unrecognizable by the computer programs. He merged his two problems to create reC.A.P.T.C.H.A. reC.A.P.T.C.H.A. asks the user to translate two words. The first word is the C.A.P.T.C.H.A. word; the second word is a partially distorted word from a book that needs to be transcribed. The large user base is able to transcribe books with the same accuracy as two professional transcribers but it is much faster and has no cost.

In this study, we propose a framework, called Hoi Polloi Computing, which demonstrate how common people can contribute to the success of an Internet application and how various business models can be derived from such a framework. The word “Hoi Polloi” stands for the masses. We propose Hoi Polloi Computing as a way of computation relying on ordinary people or general user’s input. The definition of Hoi Polloi computation is illustrated as follows:

Definition: Hoi Polloi Computing is the use of mass human computation or inputs to achieve a result faster and more affordably. The Hoi Polloi Computing framework consists of 6 main characteristics that can contribute to the success of the implementation of a Hoi Polloi Computing system:

1. Low entrance threshold
2. Large user base
3. Incentive for participants
4. Valuable product or services

5. Distributable and sharable information
6. Non-existent/limited monitoring force

Low Entrance Threshold: Hoi Polloi Computing must have an easy to access framework in order to allow for the input of new information. Low entrance threshold also contributes to a large user base, another factor for a successful implementation. For example, Wikipedia [5] has no membership registration, and random users can edit pages anonymously.

Large User Base: Hoi Polloi Computing must have a large user base to contribute to a collective database. A large user base supports a variety of different viewpoints and a large area of distribution. A large user base also promotes timely data collection and ensures incentive for others to contribute. For example, Youtube has a user base of 48.2 million users [3] creating 48 hours' worth of video per minute [4].

Incentive: Hoi Polloi Computing requires an incentive to continually contribute to the framework. The continued contribution ensures a dynamic product that is constantly updated. Incentive can take the form of recognition of contribution and gaining reputation other than monetary rewards. For example, Youtube has a Partner program that allows popular users to put ads in their videos and generate revenue.

Valuable Product: Hoi Polloi Computing must provide a product that is not producible or will be very costly to be produced by machine computation. For Example, Wikipedia is free while the latest version of Encyclopaedia Britannica is \$480 [1].

Distributable information: Hoi Polloi Computing requires the capability to distribute and share the information to all users. For example both Youtube and Wikipedia allow free distribution of their product to everyone on the web, registration is optional.

Non-Existent/ Limited Monitoring Force: A limited monitoring force can be used to filter some of the information distributed but too large of a monitoring force will raise the entrance threshold and dissuade potential users. For example, Wikipedia has a few pages more strictly monitored to stop vandalism, but most articles are openly editable by everyone.

Based on the Hoi Polloi framework proposed above, there are many potential applications that can benefit from massive user based computing. For example, an emergency services alert system using social networking sites to alert of new disease outbreaks or natural disasters. Users would upload information about the disaster to social networking sites. Each user would throw up one flag. After enough flags are activated, the local authorities would be alerted; even more flags and the national emergency services would be alerted. The information uploaded allows local and national emergency services to respond faster and more effectively to any incident.

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