Ethical issues of BitTorrent

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Abstract—**BitTorrent is a content distribution protocol that enable efficiency of Peer-to-Peer (P2P) file sharing which is the process of transferring and sharing digital files between computers. However, BitTorrent have been known as an efficient way to get copyrighted material, usually for free. This action is also known as piracy. In this paper, the authors evaluate the ethical issues of sharing copyrighted material via BitTorrent protocol using 7 ethical theories, namely Subjective Relativism, Cultural Relativism, Divine Command Theory, Kantianism, Act Utilitarianism, Rule Utilitarianism and Social Contract.**

Keywords—**BitTorrent, Peer-to-Peer, file sharing, ethics, pirate**

I. INTRODUCTION

Internet has been considered as one of the vital factors for the development of society due to its functions to every field of life. Starting from 1965, the first wide-area computer network was built by Lawrence G. Roberts MIT Researcher, based on the connection between the TX-2 computer in Mass and the Q-32 in California with a low speed dial-up telephone line [1]. This was the evidence of the ability of communicating between the time-shared computers, running programs or accessing data between them. After that, as the technology continued to improve, this kind of information infrastructure was evolved in different aspects such as speed, adaptation or security. As a result of creating and developing of organizational structures, the influences of Internet reach not only the communication between computers but also entire society in many fields using online tools for other purposes as well [1].

As the society evolves, the needs of transferring large data between people through the use of Internet does also. Due to some disadvantages of Client-Server networking, the new kind of mechanism for accessing and retrieving files from one computer to the others named peer-to-peer file sharing was invented and used widely [2]. And the first name of software envisioning this process is Napster created in 1991, followed by the development of Kazaa and BitTorrent. This also leads to many of issues in society and the major point the authors would like to mention in this paper is the copyright materials transferred through this method.

In section II, we would like to discuss about the general information and knowledge about peer-to-peer file sharing and its related concepts. There are also information about the works relating to our ethical issue. In section III, we present about the methods we based on, which are the main theories in ethic, and discuss the problems based on these theories. For a more throughout explanation regarding our works, please refer to this section. In section IV, we conclude our works based on the discussion in section III.

II. BACKGROUND AND RELATED WORK

A. Background

Peer-to-Peer (P2P) network consist of 2 or more PCs, which are called "peers". Peers share their resource such as bandwidth, processing power, disk space with the network, without need a centralized server. [3]

Peer-to-Peer file sharing is the distribution and sharing file using Peer-to-peer network. To download, you will need a software rather than a traditional web browser [4]. In peer-to-peer file sharing, you download from peers who has the file, or part of it, rather from a centralized server. Then when you have the file, you upload it to other peers who need the file. [5]

In 1999, peer-to-peer file sharing is popular with Napster. Napster uses central servers that link user who has the files with who has the file. Then two users would transfer the file privately, but only music file. [6]. Later, Napster was shut down due to copyright infringement in July 2001 [7].

After Napster, the second generation peer-to-peer file sharing, like Kazaa, that do not use any central server. [8]

BitTorrent is a Peer-to-Peer sharing protocol which was release on July 2, 2001 [9]. Similar to Napster, Bittorent uses central servers called trackers [5]. To upload, uploader will create a '.torrent' file containing information about the file, tracker will store this information. Downloader will download that file, and use the information finding peers with the helps of tracker which can be hosted by anyone [5]. Although Bit-Torrent needs trackers as central servers, multiple trackers can exist, as any .torrent can be registered with multiple trackers, making BitTorrent less central vulnerability [5]. Bittorent also has DHT, Local Peer Discovery, Peer exchange reducing the dependency on central server [10]. Hence, it is difficult to take down files while it is already on the network.

Intellectual property is an creation of mind, such as invention (patent), an idea that is materialized into book, movies, software (copyright) or name, image using in commerce (trademark). [11].

Piracy is reproducing someone's intellectual property without permission [12]. The Intellectual property which is pirated

usually movies, books, software. There are many websites that help piracy via BitTorrent such as The Pirate Bay [13], Kick ass [14] ...

B. Related work

There are many research relating to articles and laws about BitTorrent, pirate and copyright infringement. Bright, Stephen explain why BitTorrent is not affected by international law [15]. G Douglas's Copyright and Peer-To-Peer Music File Sharing: The Napster Case and the Argument Against Legislative Reform study Napster case, which is shut down due to copyright infringement [7]. Siganos, Georgos and Pujol, Josep M and Rodriguez, Pablo prove that BitTorrent can be monitored [16].

III. METHODOLOGY

In this section, we evaluate the ethical issues of BitTorrent according to theories of ethic.

A. Subjective Relativism

According to Subjective Relativism, user participating in the networking community has the right to decide for himself or herself the concept of right and wrong, which are the ones they see fit [17] . Using BitTorrent, in particular, is really the one they find it easy to send or retrieve files on the Internet regardless of the others' opinions even though it is copyrighted materials; they only choose the straightforward ways for them to get the data they want since they see that it would be a way to help them save money. In contrast, in term of the aspect of owners, they would think that the action of sharing their creative works is completely wrong as they gain nothing from this action and it can affect their profit as well. Hence, to them, it could be considered as an unethical issue. In the end, Subjective Relativism cannot conclude whether it is right or wrong.

B. Cultural Relativism

Regarding the theory of Cultural Relativism, the actual moral guidelines of a society are actually the one deciding the concepts of right and wrong [17]. Instead of remaining stable in the same period of time, it presents differently from place to place. In fact, the issue of using BitTorrent to sharing copyrighted materials that could be considered wrong in a society may not be really the wrong one in other society. On the one hand, this is true in the situation of Switzerland, which is called The safest country for downloading torrent [18]. Especially, Vietnamese used to have problems about copyright infringement that they use copyrighted material for both personal and commerce. The downloading of copyrighted content through file sharing services (BitTorrent) is a little bit more risky in Canada after enacting mandatory data logging and monitoring by Internet Providers and VPN service providers which affects Canadian BitTorrent users who were previously allowed to download torrents largely without issue[19]. On the other hand, considering other countries comprising USA, UK this action is totally wrong according to the government's laws of these countries [20].

C. Divine Command theory

As regards to Divine Command theory in ethic, every action which is considered wrong is the one that contraries the will of God and every right action would be the one that obeys the will of God [17]. In fact, there are a number of holy books that are contributed to various regions, translated into different languages and it also cannot address all moral problems that can be faced with in real society. However, when dealing with the problem of copyright infringement, there are actually plenty of sentences that the bible says about intellectual property since the problem of treating another's property or acting toward people in the society are really mentioned a lot in holy books. For instance, "You shall not steal. [21] or Cursed is the one who moves his neighbor's landmark[22] are the ones related to the action violating intellectual copyright [23]. Therefore, piracy is totally wrong.

D. Kantianism

In regards to the theory of Kantianism, actions of people are considered right if it is guided by moral laws which are universal. In order to decide whether a moral rule is appropriate, Kant proposed two formulas of Categorical Imperative [17]. Using the first formulation, it could be true that BitTorrent users who sharing copyright contents are using other's creative works as a means to an end. It means that they do not care ether other's interest or the result of their actions; they would like to save their money from purchasing contents such as music or movies which can be downloaded easily and quickly using P2P services.

E. Act Utilitarianism

As regards Act Utilitarianism theory, the Greatest Happiness Principle, a good action is the one whose net effect is to produce more happiness than unhappiness and otherwise [17]. According to the situation of the problem, the authors would like to debate this problem based on its benefits. Considering the case of sharing a copyrighted movie on the Internet using BitTorrent. Some people download and watch for free. However, the sale of that movie is decreased. As a result, the net income of companies which publish the movie reduces, causing some employees lose their job. This could be said that the drawbacks of this action outweigh its benefits, so the action of downloading copyrighted materials is not accepted in this ethical theory.

F. Rule Utilitarianism

According to the ethical theory of Rule Utilitarianism applying the Principle of Utility to moral rules, an action is morally right if it is followed by everyone, leading to the greatest increase in total happiness [17]. In this case, the authors would like to discuss the moral rule of downloading copyrighted contents from BitTorrent. On the side of BitTorrent users, retrieving copyrighted contents could save them money and they could use that money to improve their standard living. Another advantage is that it could lead to generate new revenue streams, free access to cultural materials and learning [24] . On

the other side, this problem could lead to enormous impacts on the number of copyrighted contents as well as its owners such as artists, singers They would not want to produce their creative products without receiving any profits since they may have problem with their finance if they continue to do so or they do not have any motivation in. Besides that, another negative effect of using BitTorrent is that users' computer could be monitored by others, providing viruses easily into their network [25]. Altogether, it could be seen that people's happiness would be decreased. Hence, this theory does not accept this model rule.

G. Social Contract

Social contract is a voluntary agreement between individuals for their mutual benefit. [17]. There is the social contract between who intellectual property creator and society. Someone that create Intellectual property for society to use, then he should has something in return. For example, a writer writes a novel, then he should get money from selling his books. Then he can feed himself, his family and continue to write novel for society. Both reader and the author himself have benefit. However, when people pirate on intellectual property, it violates social contract, because you use their creation without giving them anything in return. At the end, people would see that creating new products gives them no benefit which leads to nobody wanting to create Intellectual property for a living. Hence, we would not have any movies to watch at all, if we keep pirating movies from the pirate bay.

IV. CONCLUSION

In fact, BitTorrent is legal after all, but the way people use it should be the one need to be mentioned. According to the methods analyzed in section III, the authors would like to conclude that downloading copyrighted material using BitTorrent is considered as an unethical action.

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