
Tracking Human Trafficking with Crowdsourcing

Malay Bhattacharyya

Department of Information
Technology
Indian Institute of Engineering
Science and Technology, Shibpur
Howrah – 711103, India
malaybhattacharyya@it.iiests.ac.in

Abstract

Human trafficking for the purposes like forced labor or commercial sexual exploitation has sustained to be one of the threatening problems worldwide for a long time. In this paper, we show that this problem can be addressed by harnessing the power of crowdsourcing in an efficient way. We propose a dynamic model that allows the crowd volunteers to collect suspicious features for the identification of human trafficking.

Author Keywords

Crowdsourcing; Human Trafficking; Distributed Processing

ACM Classification Keywords

H.1.2 [User/Machine Systems]: Human information processing; H.3.4 [Systems and Software]: Distributed systems; H.5.3 [Group and Organization Interfaces]: Computer-supported cooperative work

Introduction

Human trafficking is a form of human trading for the purposes of commercial exploitation of the victims in different forms. It has become a serious threat to the mankind for diverse reasons. The major victims of human trafficking are women and children. The latest report published in June 2016 by the US Department of State reveals a dramatic increase of the number of prosecutions, convictions and

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the Owner/Author. Copyright is held by the owner/author(s). CHI'17 Extended Abstracts, May 06-11, 2017, Denver, CO, USA

victims of labor trafficking over the last few years [3]. In fact, the number of countries suffering the worst from such problems (placed in Tier 2 Watch List and Tier 3) are more than seventy to date. Unfortunately, human trafficking has become one of the highest sources of illegal income around the world in the last few decades, second only to the drugs trafficking [1].

There are very limited studies that deal with the problem of identifying human trafficking with computational models. A few of the previous studies have attempted to address this problem by recognizing the human trafficking indicators [6]. Such indicators are used as the suspect pointers to human trafficking activities and can be classified as early or late indicators. Some computational models have been proposed in the last few years that employ these indicators for detecting and profiling human trafficking suspects. These include formal concept analysis lattice [6], temporal concept analysis lattice [6], concept lattice diagram [4, 5], etc. These models basically help to gain insights from the various static activities (although temporal) of human trafficking suspects. However, these works are mainly based on human-centred knowledge discovery in suspicious activity police reports or social media activities. On the contrary, we propose a dynamic model that exploits the power of crowdsourcing to track human trafficking activities in real-time.

Basic Terminologies

In this section, we introduce some basic terminologies that will be used throughout the paper. Our model is based on the the concept of crowdspeying, which is a kind of collaborative crowdsourcing activity for the purpose of spying on lawbreakers [2]. In crowdspeying, both the explicit and implicit nature of actions are combined. We assume that crowdspeying is confined to an online social network between the participating people. A node is basically a partic-

ipating entity in the crowdspeying operation (therefore it also includes the spied node). The private relation R is used to denote the connection between multiple nodes (like hyper-arcs).

- **Open crowdspeying:** Open crowdspeying is an activity where the nodes participating in crowdspeying are independent of any relation, i.e., the private relation set R is null.
- **Automatic crowdspeying:** The crowdspeying activity which is not guided by any mechanism design is an automatic crowdspeying.

Proposed Approach

Spying to recognize human trafficking is highly demanding for its distributed power of information sharing. It has already been argued in an earlier study that crowdspeying should be open for recognizing human trafficking [2]. This is because open crowdspeying is useful for rapid transfer of information albeit it includes the risk factors. We propose a model where the crowd workers can participate in a social network unanimously and post suspicious reports. These suspicious reports are mainly based on a few pre-defined features collected with time. An example of a suspicious activity along with the relevant features that could be helpful for tracking the potential human trafficking is shown in Fig. 1.

The proposed mechanism is open and automatic and it is all about collecting pre-defined temporal features and cross-verifying it online unanimously. If at any place any suspicious activity is detected by any crowd worker, he is

expected to take a snap of the event and post it. The image will be segregated into multiple smaller images for collecting the following relevant features with the help of open crowdsourcing.

- Nearest landmark
- Street number
- House number
- Car number
- Current time

Now, based on the geographic location (taken from the GPS of crowd workers) the features will be distributed and get verified by more number of crowd workers. After collecting opinions from the neighboring nodes, it simply becomes a problem of judgment analysis. The working mechanism behind the proposed model is entirely based on volunteering. Monetary incentives are inappropriate because of the higher risk of spamming.

Challenges

Our initial attempts reveal that the crowd workers are less interested in getting involved in open crowdspying activities due to higher chances of threats. It is a challenging task to encourage the participation of the crowd workers by ensuring their safety. The study of open and automatic crowdspying activity in the form of a network model might also be useful for gaining additional insights about the leader nodes. We are still unable to work on real-life scenarios due to many other challenges like neighbor verification and spammer identification. It is also interesting to incorporate the control over the nearby CCTV cameras in the proposed crowd-powered model. But, this approach highlights that

crowd-powered models can be effectively used for trafficking human trafficking with appropriate mechanism design.

Acknowledgments

The work of Malay Bhattacharyya is supported by the Visvesvaraya Young Faculty Research Fellowship 2015-16 of DeitY, Government of India.

References

- [1] Patrick Belser. 2005. Forced labour and human trafficking: Estimating the profits. DECLARATION/WP/42/2005 (2005).
- [2] Malay Bhattacharyya. Spying with the Crowd. In *Proceedings of the Third AAAI Conference on Human Computation and Crowdsourcing*. San Diego, USA.
- [3] US Department of State. 2016. Trafficking in Persons Report 2016. (2016), Retrieved on January 01, 2017. <https://www.state.gov/j/tip/rls/tiprpt/2016>
- [4] Jonas Poelmans, Paul Elzinga, Guido Dedene, Stijn Viaene, and Sergei O. Kuznetsov. 2011. A concept discovery approach for fighting human trafficking and forced prostitution. In *International Conference on Conceptual Structures*. Springer, Derby, United Kingdom, 201–214.
- [5] Jonas Poelmans, Paul Elzinga, Dmitry I. Ignatov, and Sergei O. Kuznetsov. 2012. Semi-automated knowledge discovery: identifying and profiling human trafficking. *International Journal of General Systems* 41, 8 (2012), 774–804.
- [6] Jonas Poelmans, Paul Elzinga, Stijn Viaene, and Guido Dedene. 2010. A method based on Temporal Concept Analysis for detecting and profiling human trafficking suspects. In *IASTED International Conference on Artificial Intelligence*. Innsbruck, Austria, 330–338.



Figure 1: The photo of a launch boat suspected to be involved in human trafficking. The important features to be reported here are the number (or any other identification details) on the boat, location of the photographer, and nearby landmarks, if any. The time of taking the photo is also an important feature to be considered.