

Darknet Forums Observatory

Degree programme : BSc in Computer Science | Specialisation : IT Security
Thesis advisor : Prof. Dr. Emmanuel Benoist
Expert : Daniel Voisard (Federal Office of Communication OFCOM)

Because the darknet offers anonymity to users, there are several forums where users can sell or buy illegal goods (weapons, fake IDs, etc) and discuss freely about topics, which are often of an illegal matter. The objective of our thesis was to crawl forums, save a representation of them and find a solution to transform and analyze the data.

Introduction

Previous projects at BFH have already dealt with darknet marketplaces. But there is a second place where trades take place: darknet forums. The structure of these forums is similar to forums on the clearnet. However darknet forums often also contain a market section with offers of goods (email-address collections, credit card data, passport scans, tutorials, guides, accounts and also drugs). In comparison to marketplaces, forums are better suited for conversations and discussions. Some of the main conversation topics on the forums we examined are cybercrime activities and related subjects. There is currently no major English-speaking forum on the darknet in this area, but we found several Russian-speaking forums and a German-speaking forum.

Goal

The goal of this thesis is to adapt a crawler, which was developed for markets, so it can crawl darknet forums. With the acquired data the turnover of vendors, the biggest vendors, the offered goods and the active times of the users shall be analyzed. In addition to that a solution to translate the Russian text has to be found, so that the students are able to work with the text and understand what it means. And another goal is to compare a Russian and a German forum.



Price development cannabis

Approach

Modification of the crawler

The crawler which was developed in a former thesis can be configured to work with different darknet markets. This is why we expected that it can be adapted to forums with minor changes. However, markets and forums have a completely different structure, hence we had to modify and revise multiple parts to make it work with forums.

Transformation

To work with the data, which we crawled from the Russian forum, we had to translate the text into English. The challenge was to find a way to translate 130 million chars. Because all APIs were too expensive or blocked us when we tried to do this, we ended up using a translation software.

Analysis

We used the graphing library “Plotly” to visualize the different data by creating graphs. The system we developed can be used for the analysis of even more forums in the future.

Results

We made several interesting observations in our analysis. Among other things, we were able to prove that there is more than one single person behind some of the vendor accounts. We did this by analyzing the online times of the users and it shows that some users are online almost around the clock. Also the results show that there is a decrease in posts on Fridays and on Saturdays. We were also able to estimate the turnover of a vendor, by analyzing the pictures of his stock, which he uploaded every month. We also analyzed the price development of different drugs and the result shows that the price of cannabis is pretty steady whereas the price of ecstasy dropped by half in the last year.



Marco Maurer



Lukas Müller