Splunking to fight human trafficking

Sherrie Caltagirone | Global Emancipation Network
Monzy Merza | Head of Security Research
Satoshi Kawasaki | Splunk4Good Ninja

September 27th, 2017 | Washington, DC
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Bio: Sherrie Caltagirone
Founder of Global Emancipation Network

Global Emancipation Network employs cutting-edge data analytics to disrupt human trafficking operations, embark on effective rescue campaigns, inform domestic and international policy, and restore the victims of modern-day slavery to dignity.
Bio: Monzy Merza
Head of Security Research

- Splunker since 2011, Splunk customer before 2011
- Cyberisms, dev, test, eat, sleep, learn, and repeat
- Privileged to travel and learn from Splunk customers!
- Likes to speak at conferences with colleagues
- Doing 3 talks this year:
  - Day 2 Security Keynote Demo with Maritza Perez
  - Splunking to fight human trafficking with Satoshi Kawasaki
  - Threat Hunting with Machine Learning with Phillipp Drieger

Thanks for coming to .conf and I’ll be here all week! @monzymerza
Bio: Satoshi Kawasaki
Splunk4Good Ninja

BS in Aerospace Engineering from Georgia Tech

▶ Also joined Splunk in 2013
  • 3 years of Professional Services (PS)
  • 1+ year of Splunk4Good

▶ Unofficially became a dashboard/visualization specialist in PS
  • .conf 2014: I Want that Cool Viz in Splunk!
  • .conf 2015: Enhancing Dashboards with JavaScript!

▶ Also doing 3 talks this year
  • .conf 2017: Speed up your searches!
  • .conf 2017: Splunking to fight human trafficking
  • .conf 2017: Splunking the 2016 presidential election
"Enslave the liberty of but one human being and the liberties of the world are put in peril."

—William Lloyd Garrison, 19th century abolitionist
Types of human trafficking

- Sex trafficking
- Forced labor
- Debt bondage
- Domestic servitude
- Child soldiering
- Mail-order brides
- Forced begging
- Child sex tourism
- and others
Agenda

- Major pain points in the anti-trafficking community
- Data-led, intelligence-centric approach
- Architecture and components of the analysis system
- Lessons and next steps
## Global trafficking statistics

From "Trafficking in Persons Report 2017" – U.S. Department of State

<table>
<thead>
<tr>
<th>Year</th>
<th>Prosecutions</th>
<th>Convictions</th>
<th>Victims identified</th>
<th>New or amended legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>5,606 (432)</td>
<td>4,166 (335)</td>
<td>49,105</td>
<td>33</td>
</tr>
<tr>
<td>2010</td>
<td>6,017 (607)</td>
<td>3,619 (237)</td>
<td>33,113</td>
<td>17</td>
</tr>
<tr>
<td>2011</td>
<td>7,909 (456)</td>
<td>3,969 (278)</td>
<td>42,291 (15,205)</td>
<td>15</td>
</tr>
<tr>
<td>2012</td>
<td>7,705 (1,153)</td>
<td>4,746 (518)</td>
<td>46,570 (17,368)</td>
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</tr>
<tr>
<td>2013</td>
<td>9,460 (1,199)</td>
<td>5,776 (470)</td>
<td>44,758 (10,603)</td>
<td>58</td>
</tr>
<tr>
<td>2014</td>
<td>10,051 (418)</td>
<td>4,443 (216)</td>
<td>44,462 (11,438)</td>
<td>20</td>
</tr>
<tr>
<td>2015</td>
<td>19,127 (857)</td>
<td>6,615 (456)</td>
<td>77,823 (14,262)</td>
<td>30</td>
</tr>
<tr>
<td>2016</td>
<td>14,897 (1,038)</td>
<td>9,071 (717)</td>
<td>66,520 (17,465)</td>
<td>35</td>
</tr>
</tbody>
</table>

The numbers in parentheses are those of labor trafficking prosecutions, convictions, and victims identified.
Many silos

List of organizations that combat human trafficking

From Wikipedia, the free encyclopedia

This is a dynamic list and may never be able to satisfy particular standards for completeness. You can help by expanding it with reliably sourced entries.

This is a list of organizations with a primary, or significant, commitment to ending human trafficking.

Other lists include:
- Freedom Collaborative, which is managed by Liberty Asia.
- http://www.globalmodernslavery.org/

List [edit]

- Anti-Slavery International, Anti-Slavery International works at local, national and international levels to eliminate all forms of slavery around the world
- 8th Day Center for Justice, a Roman Catholic non-profit organization based in Chicago, Illinois
- A Better World, an organization that is based in Lacombe, Alberta, Canada[1]
- ACTA Alberta, a Canadian coalition of Government of Alberta representatives, non-governmental organizations, community organizations, and the Royal Canadian Mounted Police[2]
- Agape International Missions, a nonprofit organization in Cambridge[3]
- Arizona League to End Regional Trafficking, a coalition representing partnerships with law enforcement, faith-based communities, non-profit organizations, social service agencies, attorneys and concerned citizens
- Awareness Against Human Trafficking (HAART) is a non-governmental organization fighting against human trafficking in Kenya.
- Bishop Outreach, a non-profit, non-governmental organization involved in rescuing those enslaved in human trafficking.
- Breaking Free, a nonprofit organization[4] based in Saint Paul, Minnesota, United States that provides various services to prostitutes, such as helping them to live and work outside the sex industry[5]
- California Against Slavery, a human rights organization dedicated at strengthening California state laws to protect victims of sex trafficking
- Centre to End All Sexual Exploitation, a nonprofit organization that helps human trafficking victims, sex workers, and the homeless by providing them with resources[6]
- Coalition to Abolish Slavery and Trafficking, a nonprofit organization that helps human trafficking victims by providing Social Services, Legal Services, and Outreach and Training
- Chet Da, a coalition founded by Helen Sword[7] that connects Christian organizations committed to ending sexual abuse and trafficking[8]
- Coalition Against Trafficking in Women, an international non-governmental organization opposing human trafficking, prostitution, and other forms of commercial sexual exploitation
- Coalition to Abolish Slavery and Trafficking, a Los Angeles-based anti-human trafficking organization
- Deborah's Gate, a human trafficking victims safe house run by The Salvation Army in Vancouver, British Columbia, Canada that opened in 2008[9]
- Develop Centre for Africa Development, a nonprofit organization in Nigeria with focus on combating human trafficking, gender-based violence, child abuse; and providing educational supports to vulnerable children.
- Durham Melaka Samarahan Committee, a collective of 65,000 sex workers in West Bengal.
- ECRT, an international non-governmental organisation and network headquartered in Thailand which is designed to end the commercial sexual exploitation of children
- The Emancipation Network, an international organization dedicated to fighting human trafficking and modern-day slavery
- EVE, an advocacy group based in Vancouver, British Columbia, Canada[10]
- The Exodus Road, a non-profit coalition of organizations specialized in the intervention component of human trafficking, training and funding partnerships with local authorities to actively rescue people trapped in human slavery.
- Faces to Faces Bulgaria, an organization whose primary mission is to prevent cases of forced prostitution and human trafficking in Bulgaria[10][12]
- Florida Abolitionist, a nonprofit[13] non-governmental organization opposing human trafficking in Florida, United States
- Free the Slaves, is dedicated to ending Slavery Worldwide
- Freestore, an organization whose primary mission is to provide sustainable employment and economic empowerment to victims of sex trafficking in South Asia.
Anti-trafficking stakeholders

Who owns the data?

Government
- Government Agencies
- Law Enforcement
- Justice System
- Legislators
- International Organizations

Nonprofits
- Anti-trafficking Organizations
- Victim Services
- Hotline Operators
- Academics

Private
- Private Businesses
- Healthcare Providers
GEN's anti-trafficking ecosystem

Data
- Minerva
- Secure data sharing
- Analytics

Exchange
- Deconfliction
- Best Practices
- Efficient VSP identification

Tech
- Resource-sharing
- Tech Dispersion
- Tech volunteers
Simplified process

- Collect
- Search
- Splunk
- Analyze
- Action
Collect

- Recorded Future scrapes based on keywords
- Full ads are pulled down via Backpage API
- Custom scrappers pull forum posts from other relevant forum boards
- Splunk indexes the posts and its metadata
Example data

Come see me. South east Portland. 
% Finally back!!! % Incall today only! % Sandy blvd %
I really want some company. I got a new number 555_threefoureight_2432
No blocked numbers! Serious men only please.

reply_count: 1077
reply_parent_id: 9212988
security: {[+]}

self_id: 9212988
chat: "0-705777f1873300080229a0848d1369a1ac7acR"
Example data challenges

Unpredictable length of post

Mixed fonts and formats
• Search any posts on any keywords
• Extract new fields from the raw text
Searching

State extracted from another field
Backpage shuts down adult section, citing government pressure and unlawful censorship campaign

Disruption
• Single value panels for overviews
• Visualizations for easier interpretations
• Interactive inputs and drilldowns for investigations and filtering
Dashboards

Interactive filters for further investigations
Dashboards

Top 50 users by # of posts

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>User 1</td>
<td></td>
<td></td>
<td></td>
<td>32.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 2</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 3</td>
<td></td>
<td></td>
<td></td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 4</td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 5</td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 6</td>
<td></td>
<td></td>
<td></td>
<td>5.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 7</td>
<td></td>
<td></td>
<td></td>
<td>10.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 8</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 9</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 10</td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>User 11</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User 12</td>
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<td></td>
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<td>7.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
### Dashboards

Numbers, emails, and locations tied to username

<table>
<thead>
<tr>
<th>user_name</th>
<th>user_id</th>
<th>posts</th>
<th>phone</th>
<th>email</th>
<th>location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>107061</td>
<td>97</td>
<td>139502</td>
<td><a href="mailto:claire_miller@gmail.com">claire_miller@gmail.com</a></td>
<td>everett</td>
</tr>
<tr>
<td></td>
<td>96929</td>
<td>1</td>
<td>140685</td>
<td>N/A</td>
<td>renton</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>118015</td>
<td>1</td>
<td>142075</td>
<td>N/A</td>
<td>portland</td>
</tr>
<tr>
<td></td>
<td>105633</td>
<td>10</td>
<td>143086</td>
<td>N/A</td>
<td>everett statewide</td>
</tr>
<tr>
<td></td>
<td>187444</td>
<td>1</td>
<td>202753</td>
<td><a href="mailto:shayyy@yahoo.com">shayyy@yahoo.com</a></td>
<td>ct seattle olympia tacoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:shayyy@yahoo.com">shayyy@yahoo.com</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>191991</td>
<td>1</td>
<td>202810</td>
<td>N/A</td>
<td>s. seattle</td>
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<tr>
<td></td>
<td>242712</td>
<td>2</td>
<td>203427</td>
<td>N/A</td>
<td>ct seattle kent tacoma</td>
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<tr>
<td></td>
<td>126069</td>
<td>2</td>
<td>206200</td>
<td>N/A</td>
<td>beaverton bellevue bellingham b</td>
</tr>
<tr>
<td></td>
<td>209219</td>
<td>8</td>
<td>206201</td>
<td>N/A</td>
<td>portland s. seattle seattle</td>
</tr>
</tbody>
</table>
Drilldown

Drilling down to a single user
• Alerts are based on thresholds for analytics
• Can be adhoc – e.g. alert on a keyword – or more complex analytics
• Alerts can drive actions – emails, scripts, API calls
The Splunk solution
A data-led, intelligence-centric solution

Operational constraints
▶ Limited budget
▶ Time to value
▶ Non-technical investigators
▶ Multiple access levels and enrichment layers

Splunk solution
▶ Reduces ingest and parsing costs
▶ Imbedded analytics speeds process
▶ Easy-to-use dashboards and UI skins
▶ Central nerve center
What's next and call to action!

- Integrate with image processing and other databases
- Natural language processing
- Enable 3rd parties to interact/grow the system
- Full time developer and committed volunteers needed – please donate!
- Follow Us – Global Emancipation Network!
  - @GblEmancipation
  - www.globalemancipation.ngo
This work is being made possible with support from Splunk management, the Splunk4Good project, and the expert help of partners in support of the Global Emancipation Network. Thank you!!

Thanks to our partners
Thank You

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