Lab1: Descriptive Paper of ODU Spring 2019 CS411 Team Silver Project

Crime HotSpot

CS411W Spring 2019 Team Silver
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1. Introduction

Description of crime mapping and Crime HotSpot.
- The need for publicly available crime mapping software
  - Personal Safety
  - Hearsay vs fact-based knowledge concerning crime

Background of what the current problem is:
- Differentiating violent crimes from nonviolent crimes
  - Difference between crimes occurring and the risk of crime impacting user
- Cluttered interface/information overload

Characteristics of an ideal solution:
- Provides context to data
  - Crimes shown relevant to user
  - Different crimes are weighted differently
- Conveys information in a meaningful and understandable way
  - Minimal clutter
  - Provides relevant statistics that complement map
    - Method for comparing areas

2. Product Description

- Discuss what a heat map is, why we are using one, what advantages that has compared to the problem we mention with traditional tools.
- Solution flow:
  - Simplify crime mapping
  - Reduce data noise
  - Visualization of crime statistics

2.1. Key Product Features

2.1.1. Crime Statistics

2.1.2. Geographical Crime References

2.1.3. Crime Heatmap

2.1.4. SafetyScore

2.2. Major Components

2.2.1. Crime HotSpot Website

2.2.2. Google Maps API

2.2.3. Crimes Database

2.2.4. Application Server

3. Identification of Case Study

- The general public
- Businesses
- Local Governments/Non-profit organizations

4. Product Prototype Description

5. Glossary

5.1. Heatmap - a representation of data in the form of a map or diagram in which data values are represented as colors.

5.2. SafetyScore - A number, proprietary to Crime HotSpot, that represents the relative safety of an area.

5.3. Crime Map - A map that has crime statistical data overlaid on it to provided information on the criminal activity of an area.

5.4. Javascript MEAN Stack - MEAN is a free and open-source JavaScript software stack for building dynamic web sites and web applications. The MEAN stack is MongoDB, Express.js, AngularJS (or Angular), and Node.js.

5.5. JavaScript Object Notation (JSON) - a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the JavaScript Programming Language

5.6. Application Programming Interface (API) - a set of functions and procedures allowing the creation of applications that access the features or data of an operating system, application, or other service.

6. References

Bureau of Justice Statistics. (2018, December). *Criminal Victimization.* Retrieved October 5, 2018 from Bureau of Justice Statistics: https://www.bjs.gov/content/pub/pdf/cv16_sum.pdf

Business Insider. (n.d.). *Tourist.* Retrieved October 5, 2018 from Business Insider: amp.businessinsider.com/images/5abbaa40a54f322b2d8b4597-750-563.jpg

Crime HotSpot. (2018, December 15). *Presentations.* From Crime HotSpot: https://www.cs.odu.edu/~cpi/old/410/silverf18/presentation

CrimeMapping.com. (2018, December 5). *Helping You Build a Safer Community* . From TriTech Software Systems: CrimeMapping.com

FBI: UCR. (2017). *Offenses Known to Law Enforcement.* From FBI's Uniform Crime Reporting (UCR) : https://ucr.fbi.gov/crime-in-the-u.s/2017/crime-in-the-u.s.-2017/topic-pages/offenses-known-to-law-enforcement

Lexis Nexis. (2018, December 18). *Lexis Nexis Community Crime Map.* From Lexis Nexis: https://communitycrimemap.com/

Microsoft Corporation. (2011, 2). *Heat Map.* Retrieved October 5, 2018 from alastaira.files.wordpress.com/2011/02/image24.png

Minnesota Brown. (2018, July 28). *Campaign Signs.* Retrieved October 5, 2018 from minnesotabrown.com/wp-content/uploads/2018/07/campaign-signs.png

Neighborhood Scout. (2018, October 8). *VA Crime Rates and Statistic.* From NeighborhoodScout: https://www.neighborhoodscout.com/va/norfolk/crime

NIJ. (n.d.). *Mapping Crime: Understanding Hotspots.* Retrieved September 5, 2018 from NCJRS: www.ncjrs.gov/pdffiles1/nij/209393.pdf

Old Dominion University. (2017, August 24). *Old Dominion University.* Retrieved September 1, 2018 from Old Dominion University: media.wric.com/nxs-wrictv-media-us-east-1/photo/2017/08/24/odu_37569108_ver1.0_1280_720.jpg

Search Business Analytics. (2011, July). *What is a Heat Map (Heatmap).* Retrieved September 5, 2018 from SearchBusinessAnalytics: searchbusinessanalytics.techtarget.com/definition/heat-map

Wikipedia. (n.d.). *Crime Mapping.* Retrieved October 5, 2018 from Wikipedia: https://en.wikipedia.org/wiki/Crime_mapping

Figure 1. Screen shot of crimes for the city of Norfolk, Virginia. Reprinted from Helping You Build a Safer Community in CrimeMapping.com., 2018, Retrieved from CrimeMapping.com

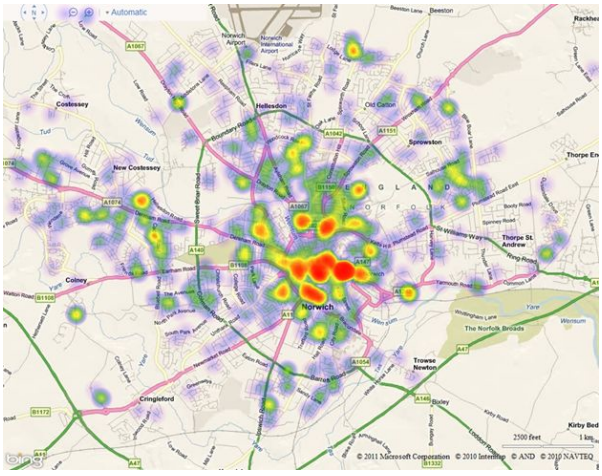

Figure 2. Example of a heatmap, with the red areas depicting a hotspot which where there is higher density of crimes. Reprinted from "Heat Map" by

Microsoft, 2011, Retrieved from alastaira.files.wordpress.com/2011/02/image24.png.