

Detecting Pattern in Crime Analysis and Identifying the Criminals using Big Data Techniques

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Abstract: *Criminal behaviour is one of our society's most serious issues. With the resurgence of such activities around the world on a daily basis, crime investigation organisations are finding it increasingly difficult to manage and probe events, either due to a lack of cops or because criminals are outsmarting the investigative process. The traditional police investigative procedure takes a long time to predict criminal profiles, suspect the next prospective crime location, or understand the crime trend. As a result, there is a need to evaluate historical crime trends more efficiently in less time, as well as anticipate future crime location and type. The police department requires a systematic method for quickly evaluating criminal profiles and identifying linked criminals. For criminal activity monitoring, an advanced analytics system is also required to track additional information such as traffic sensors, calls, videos, and police service calls, among other things. We highlighted how Big Data-based data analysis approaches can be used to avoid dealing with such situations in this paper. Furthermore, we have examined various data gathering methodologies, including Volunteered Geographic Information (VGI), Geographic Information System (GIS), and Web 2.0. The prediction based on data gathering and analysis will be the final phase. It will be accomplished through the use of Machine Learning to predict and prevent future crimes.*

Keywords: Crime, Geographic Information System, Big data, Map Reduce

REFERENCES

- [1] "Crime Statistics," data.gov.in. [Online]. Available: <https://data.gov.in/dataset-group-name/crime-statistics>. [Accessed: 07-May-2019].
- [2] "Geo BI and Big VGI for Crime Analysis and Report - IEEE Conference Publication." [Online]. Available: <https://ieeexplore.ieee.org/abstract/document/7300856>. [Accessed: 15-Apr-2019].
- [3] J. L. Mohamed Bakillah, "Exploiting Big VGI to Improve Routing and Navigation Services," Big Data, 18-Feb-2014. [Online]. Available: <https://www.taylorfrancis.com/>. [Accessed: 15-Apr-2019].
- [4] R. Broadhurst, P. Grabosky, M. Alazab, B. Bouhours, and S. Chon, "An Analysis of the Nature of Groups Engaged in Cyber Crime," Social Science Research Network, Rochester, NY, SSRN Scholarly Paper ID 2461983, Feb. 2014.
- [5] J. Nandimath, E. Banerjee, A. Patil, P. Kakade, S. Vaidya, and D. Chaturvedi, "Big data analysis using Apache Hadoop," in 2013 IEEE 14th International Conference on Information Reuse Integration (IRI), 2013, pp. 700–703.
- [6] Ishwarappa and J. Anuradha, "A Brief Introduction on Big Data 5Vs Characteristics and Hadoop Technology," Procedia Computer Sci., vol. 48, pp. 319–324, Jan. 2015.
- [7] "Electron: Towards Efficient Resource Management on Heterogeneous Clusters with Apache Mesos - IEEE Conference Publication." [Online]. Available: <https://ieeexplore.ieee.org/abstract/document/8030597>. [Accessed: 15-Apr-2019].
- [8] "Apache Hadoop 2.7.4 – MapReduce NextGen aka YARN aka MRv2." [Online]. Available: <https://hadoop.apache.org/docs/r2.7.4/hadoop-yarn/hadoop-yarn-site/>. [Accessed: 15-Apr-2019].
- [9] D. Singh and C. K. Reddy, "A survey on platforms for big data analytics," J. Big Data, vol. 2, no. 1, p. 8, Oct. 2014.
- [10] "Big data emerging technologies: A CaseStudy with analyzing twitter data using apache hive - IEEE Conference Publication." [Online]. Available: <https://ieeexplore.ieee.org/abstract/document/745340>.
- [9] T. Phyu, —Survey of classification techniques in data mining, I Proceedings of the International Multi Conference of Engineers and Computer Scientists Vol. IIMECS 2009, March 18 - 20, 2009, Hong Kong.

- [10] S.B. Kim, H.C. Rim, D.S. Yook, and H.S. Lim, —Effective Methods for Improving Naïve Bayes Text Classifiers, In Proceeding of the 7th Pacific Rim International Conference on Artificial Intelligence, Vol.2417, 2002.
- [11] S. Sindhiya, and S. Gunasundari, —A survey on Genetic algorithm based feature selection for disease diagnosis system, I IEEE International Conference on Computer Communication and Systems (ICCCS), Feb 20- 21, 2014, Chennai, INDIA.
- [12] P. Gera, and R. Vohra, —Predicting Future Trends in City Crime Using Linear Regression, I IJCSMS (International Journal of Computer Science & Management Studies) Vol. 14, Issue 07 Publishing Month: July 2014.
- [13] L. Ding et al., —PerpSearch: an integrated crime detection system, I 2009 IEEE 161-163 ISI 2009, June 8-11, 2009, Richardson, TX, USA.
- [14] K. Bogahawatte, and S. Adikari, —Intelligent criminal identification system, I IEEE 2013 The 8th International Conference on Computer Science & Education (ICCSE 2013) April 26-28, 2013. Colombo, Sri Lanka.
- [15] A. Babakura, N. Sulaiman, and M. Yusuf, —Improved method of classification algorithms for crime prediction, I International Symposium on Biometrics and Security Technologies (ISBAST) IEEE 2014