Analysis of Violent Crime Dataset Using Support Vector Machine Model

- Conference paper
- First Online: 20 April 2022
- pp 193–201
- Cite this conference paper

Emerging Technologies for Computing, Communication and Smart Cities

- Falade Adesola,

- Ambrose Azeta,

- Sanjay Misra,

- Aderonke Oni,

- Ravin Ahuja &

- Ademola Omolola

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Abstract

It is usually a challenging task predicting violent crime occurrences in space and time. Huge dataset are needed for accurate prediction of future violent crime occurrence, which in most cases were subjected to artificial intelligence or statistical methods. Most studies from literature adopted data mining techniques for violent crime prediction with some inherent limitation of accuracy as one of the gaps that needed to be filled. The study applied support vector machine model on the six different historical violent crime dataset gathered between July 2016 and July 2019 from Nigeria Police Lagos headquarter to predict spatio-temporal occurrences of violent crime in the state. The six different violent crime dataset used for the study are: armed robbery, rape, kidnapping, assault, murder and manslaughter. The dataset was preprocessed and fed into the support vector machine model built in Watson machine learning studio using python as a programming language. The model returned 82.12% prediction accuracy, which is assumed to be good enough for any prediction system. This result was evaluated using confusion matric, and tested against some results from literature, and was found to out-perform some machine learning models used in the previous studies. Based on this empirical study, the police authority could adopt this model to strengthen violent crime prevention strategies in order to mitigate violent crime occurrences in Lagos state, Nigeria.

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Author information

Authors and Affiliations

1. **Covenant University, Ota, Nigeria**
   Falade Adesola, Ambrose Azeta, Aderonke Oni & Ademola Omolola
2. **Ostfold University College, Halden, Norway**
   Sanjay Misra
3. **Shri Viswakarma Skill University, Gurgaon, Hariyana, India**
   Ravin Ahuja

Corresponding author

Correspondence to [Sanjay Misra](#) .

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Adesola, F., Azeta, A., Misra, S., Oni, A., Ahuja, R., Omolola, A. (2022). Analysis of Violent Crime Dataset Using Support Vector Machine Model. In: Singh, P.K., Kolekar, M.H., Tanwar, S., Wierzchoń, S.T., Bhatnagar, R.K. (eds) Emerging Technologies for Computing, Communication and Smart Cities. Lecture Notes in Electrical Engineering, vol 875. Springer, Singapore. https://doi.org/10.1007/978-981-19-0284-0_15

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