APPLICABILITY OF ARTIFICIAL INTELLIGENCE IN CRIME PREVENTION BASED ON DIFFERENT CRIME CAUSATION MODELS IN CRIMINOLOGY

Abstract

Crime is inevitable in the society. There has always been a deep concern about the root causes of criminality in every society. The epicanthic question of all such research is that, "What are the different compelling reasons that a person has turned out towards criminality?". Different research has been carried out to find out the probable reasons behind commission of any crime and different models have been formulated to find out reasons behind the patterns of criminality applicable in any society. Various theories of criminalities are given by different criminologists. And the one root reason behind these theories is Causation theory or the theory of Cause and Effect. The conception of the cause is visualized as the reason for all human deeds. Different theories are given such as Biological theories, Physiological theories, Economic theories and Sociological theories. These theories have suggested different stimuli with which criminality can be identified in any Human being

Artificial learning is the process which enables the machines to stimulate human intelligence.. Artificial Intelligence can be used by computer based programming of different robotic machines to identify the different stimuli in the day to day life activities of a human and even help in prevention of actual crime causation, by giving information to different stakeholders of the society which can help that person in the eradication of that particular compelling reason /stimuli of crime causation in their life. In this paper, the researchers aim to figure out various stimuli given in different theories of crime causation and how artificial intelligence can be used for crime causation.

Keywords: Artificial Neural Networks, predicting the unlawful activities, Biological theories, Economic theories, Psychological theories

Authors

Dr. Shweta Thakur
Associate Professor
School of Law Galgotias University
joinshwetathakur@gmail.com

Dr. Vikram Singh
Associate Professor
Lloyd Law College
Greater Noida.
vikramsinghlaw@gmail.com

I. INTRODUCTION

Artificial Intelligence can be used for the prevention as well as detection of the crime. AI driven crime detection is done by technology driven weapon detection as well as technological driven reading of various patterns of day-to-day activities of criminals. Use of Artificial intelligence is already seen in Law enforcement[1] and also in providing assistance to the judges and lawyers in searing different material required for the case analysis.

The Law Enforcement is carried out through Facial recognition by surveillance through CCTV cameras in different public places. Facial recognition technology is also used to identify various wanted criminals or missing children etc. It can also be used to check human trafficking instances.[2] Face recognition techniques are used for criminal identification. [3] In major developed countries such as the U.S.A. Artificial Intelligence is also used to check the recidivism[4] pattern of various offenders while determining the nature of punishment to be granted in a particular case. On the basis of recidivism analysis, the judge used to decide the type of rehabilitation technique to be executed so as to break the criminality pattern of specific offender. This is really fruitful to reduce the criminality in society and bring out peace and order in the society.

Criminology has been evolved as a specific branch to examine the various contributing factors in crime causation. It has always been successfully interpreted to figure out various techniques of crime prevention and crime detection as well as helping to warn the prospective victims also that crime can happen against them. Various theories have been evolved by different criminologists on the basis of different case studies. Four different theories are formulated and when we put technological assistance in the crime monitoring on the basis of these theories, the crime can be prevented.

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[1] The Growth of A.I. adoption in Law Enforcement available at https://www.forbes.com/sites/cognitiveworld/2019/07/26/the-growth-of-ai-adoption-in-law-enforcement/?sh=2fcc7bf1435d [2] Ibid.

[3] Karen Hao, AI is sending People to jail- and getting it wrong available at https://www.technologyreview.com/2019/01/21/137783/algorithms-criminal-justice-ai/

[4] Recidivism means the act of continuing the crime even after having been punished; meaning of recidivism in english available at https://dictionary.cambridge.org/dictionary/english/recidivism

II. DIFFERENT CRIME CAUSATION MODELS IN CRIMINOLOGY

There are different crime causation models based on different theories of crime causation. The main theories are: (i) Biological theories, (ii) Psychological theories, (iii) Economic theories and
(iv) Sociological theories.

In different biological theories, the criminologists have read the genetic basis of criminality. Different Criminologists have formulated the postulates to shadow the scientific basis of the presence of criminality in a criminal.[5] Atavism and Somatotypes are the main biological theories of Crime. Atavism is a crime causation model suggested by Lombroso. Criminality can be identified on the basis of physical appearances or Criminal genes. Lombroso has identified certain physical traits or physical abnormalities such as receding chins, flattened nose, bushy eyebrows, large chin, large jaw, twisted nose etc.[6] The inherent physical as well as acquired physical defects are also considered as a considerable factor for the accrual of criminality.[7] On the basis of different Case studies carried out, different common physical appearances are identified.[8] William Sheldon has propounded Somatotype Theory. According to which, the criminality is related to the body type. He has used somatotyping[9] as a key component to influence the behavior of that individual. Physique is directly linked to criminality among human beings.[10] The case studies are carried out and five regions are to be identified for comparison. The regions identified by William Sheldon are Facial breadth and neck thickness; front trunk breadth/ thickness; Upper and lower arm thickness; back trunk breadth/ thickness; Upper and lower leg thickness. He contended that there is always a co-relation between the physique and temperament of an individual.[11]

Psychological theories of Crime Causation emphasize the presence of certain factors such as negative experiences during early childhood, emotional distress in growing age etc. which triggers

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[5] Biological Theories of Crime available at https://psychologyworthingcollege.files.wordpress.com/2016/07/161-biological-theories-of-crime.pdf

[6] Theories and Causes of Crime available at http://www.sccjr.ac.uk/wp-content/uploads/2016/02/SCCJR-Causes-of-Crime.pdf [7] Ruth Woodruff, A Classification of the Causes of Crime Journal of the American Institute of Criminal Law and Criminology , May, 1921, Vol. 12, No. 1 (May, 1921), pp. 105-109 available https://www.jstor.org/stable/pdf/1133657.pdf

[8] Criminal Man , according to the classification of Cesare Lombroso available at https://ia600202.us.archive.org/2/items/criminalmanaccor00lomb/criminalmanaccor00lomb.pdf

[9] Somatotyping means a method of description and assessment of the body on the three shape and composition scales,
https://www.britannica.com/science/somatotype#:~:text=somatotype%2C%20in%20psychology%2C%20the%20discredited,the
%20basis%20of%20constitutional%20psychology.

[10] Does size really matter? A reexamination of Sheldon's somatotypes and criminal behavior . The Social Science Journal available at https://www.researchgate.net/publication/256158341_Does_size_really_matter_A_reexamination_of_Sheldon's_somatotypes_an d_criminal_behavior

[11] Sheldon's Somato type available at http://ecoursesonline.iasri.res.in/mod/page/view.php?id=34644

Criminality.12 Major three Psychological theories are Psychodynamic theory, Behavioral theory, and Cognitive theory. The Psychodynamic theory is propounded by Sigmund Freud. According to Sigmund Freud, there is a significant role of early childhood development in building of the personality as well as determination of societal interactions. Sigmund Freud has identified three factors which structure out the personality of a human i.e., ID, Ego, Super Ego. ID is the human genetic mental makeup which is the major contributing thought to make psychological subconscious stimuli in a human. These Psychological subconscious stimuli will lead to desires and reactions in the mind which ultimately controls our physical actions and reactions. Sigmund while explaining the first element ID has also referred to the Pleasure component. ID is always preoccupied by the immediate pleasure desire which will be fulfilled by an act or omission. The similar type of pleasure is experienced by the criminals when they accomplish the desires generated in the mind of the offender.[13] Ego is the second element of human personality. Ego is a decisive factor which regulates human activities and elevated ego can give rise to violent reactionsalso. Superego comprises morality principles learnt by the individuals from their parents and other persons living in the society. Super ego has shaped the Person's deeds and actions. [14]

Albert Bandura has given Behavioral Theory. According to this theory, Human personality is a result of childhood learning experiences. Humans always adapt their responses based on actions and conduct of others. Criminality is also an outcome of different life conditions. Bandura emphasized on the fact that the criminals are not genetically born. Criminality is acquired through life conditions and situations. It is also named as Social Learning Theory. Aggressive deviant behavior is learnt by operational interconnectivity of three factors such as family interactions, environmental experiences and mass media[15].

Cognitive theory of Crime causation is given by Dayna Boston in the year 1960. Main postulate of cognitive theory laid emphasis on the perception of the world or surrounding by an individual.Dayna Boston also laid emphasis on the external factors such as family, parenting style and personality intelligence. According to the Cognitive Theory, the criminals are having some sort ofcognitive defect. Due to cognitive defects, the criminals mainly fail to make right choices or

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[12] An Overview of Psychological Theories of Crime Causation available at https://faculty.uml.edu//jbyrne/44.521/documents/anoverviewofpsychologicaltheoriesofcrimecausation.pdf

[13] Evaluation of Psychological Criminal Theories available at https://ijalr.in/evaluation-of-psychological-criminal-theories/t

[14] *Ibid.*

[15] *Ibid.*

Decisions on the basis of information they are having. Criminals are not able to control their emotions, behavior as a result of wrong choices made by them.[16]

William Bonger has given the Economic theory of crime causation. Bonger has explained the inter-connectivity of criminality with the economic status of a person. In the present Capitalistic model, selfish tendencies of the person are aggravated. Humans want to collect maximum for themself even much more than their needs. This creates a huge gap in the economy of different sections of society. Rich is becoming richer; poor are getting poorer. Economics can be a base for criminality. Low economical background can give rise to indulgence in economic crime to meet their needs. Even persons having a high economic background can indulge in criminality such as the cases of White-Collar Crime. In white collar crime the person having a good economic background indulge into criminality by doing economic manipulations or scams.[17]

Societal factors are also considered as a base of criminality among few criminals. Five different Sociological theories are: Social Control Theory, Strain theory of Criminal Behavior, Conflict Theory, Disorganization/ Social Integration Theory and Subcultural Theories[18]. Social Control Theory explores various reasons behind the involvement in criminal activities by the criminal. Influence of the society is regarded as a contributory factor in crime causation. Travis Hirschi has propounded this theory.[19] Hirschi has figured out various reasons why one is indulged in criminality and why the other has not. And he concluded that the societal bondages are the determining factors. [20] Four elements are highlighted by Hirschi which are involved in societal bondage and these are attachments, commitments, involvements and beliefs. Attachments to specific sets of individuals such as parents, siblings, other family members and teachers etc. can be one of the factors that can safeguard the deviant behaviors. There will always be a self-assessment that the deviant behavior will lead to disrespect to the deviant as well the other directly attached to the deviant in the society. This self-assessment helps in prevention of crime. The conventional pattern of activities to which the criminal is committed is also one of the important factors in the criminality. Involvements are always important. If involvement in legal conventional

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16 Cognitive Theories of Crime: Overview and Features available at https://phdessay.com/cognitive-theories-of-crime-features/ 17 Crime Causation: Economic Theories available at https://www.encyclopedia.com/law/legal-and-political-magazines/crime-causation-economic-theories#:~:text=For%20example%2C%20individuals%20could%20engage,order%20to%20satisfy%20their%20needs.

18 Major Theories of Crime Causation available at https://www.tutorsploit.com/sociology/major-theories-of-crime-causation/ 19 What is Social Control Theory available at https://study.com/academy/lesson/social-control-definition-theory-examples.html 20 PYJ-Social Control Theory available at https://johnjayrec.nyc/pyj_controltheory/

acts is more than less time will be left with the person for involvement in the deviant behavior which leads to criminality.[21] Beliefs are also very important as they are determining factors of psychological and physical patterns of human behavior. Beliefs also give rise to the value systemwhich can safeguard the occurrence of crime.[22]

Robert K. Merton's Strain Theory of criminal behavior emphasized on the involvement of differentstrains which leads to deviance and criminality in society.[23] Strains are the basic reasons for the frustration and anger in an individual which give rise to swift towards criminality. Strains occur when there is a gap between the current status of an individual and its desired goal. There are fiveways identified by Robert K Merton to adapt the strains. These five ways identified are Conformity i.e., the cultural goals are pursued through socially approved means; Innovation i.e. the Culturallyapproved goals are obtained by using socially unapproved or unconventional means; Ritualism i.e.Achieving less elusive goals by using the same socially approved means; Retreatism i.e. to rejectboth the cultural goals and the means to obtain it, then find a way to escape it; Rebellion. i.e. to reject the cultural goals and means, then work to replace them[24].

Social Conflict Theory has examined various factors behind criminality and propounded that socialinequalities are the basis of deviant behavior. There has always been a constant struggle among different people to enjoy the limited resources available on earth.[25] Thorsten Sellin has propounded Culture Conflict Theory in 1938. Sellin has identified that homogenous societies havethe same set of norms and culture. There were very few deviances among the population of homogenous society as they shared a common culture. Heterogeneous societies have different sets of norms which give rise to deviances due to cultural and norm differences among different sectsof society. [26]

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[21] Ibid.

[22] Ibid.

[23] Robert Agnew, Strain theories available at https://www.oxfordbibliographies.com/view/document/obo-9780195396607/obo-9780195396607-0005.xml

[24] Merton's Strain Theory of Deviance available at https://revisesociology.com/2016/04/16/mertons-strain-theory-deviance/#:~:text=Crime%20is%20a%20result%20of,opportunities%20to%20achieve%20those%20goals.&text=Strain%20Theory%20argues%20that%20crime,success%20goals%20of%20a%20society.

[25]Social Control Theory Approach to Crime & Deviance available at https://study.com/learn/lesson/social-conflict-theory-crime- deviance-overview-examples.html

[26] Pamela Black, Conflict Theories of Crime available at https://www.researchgate.net/publication/282816469_Conflict_Theories_of_Crime/link/56bb542708ae090818680cad/download

According to the Disorganization / Social Integration Theory, Individual residential set up is a major contributing factor for determining deviances among humans[27]. The theory's founders highlighted certain high-risk demographics such as: areas with a high proportion of migrant workers, and areas with a high proportion of blue-collar workers.[28] Subcultural theories emphasized that the deviances are learned behaviors They focus on the content learnt by the criminals rather than the method of learning. It mainly focuses on Class or ethnic cultures[29].

III. Artificial Intelligence based models for identification of Criminality among humans

Artificial intelligence can be used to monitor the activities of the persons having maximum identical physical traits to those identified by Lombroso. The data of commonly identified physical traits of criminals can be updated in artificial intelligence-based technology which can read the physical traits of the population of certain areas and can figure out the person who can have probability of indulging in criminality on the basis of Atavism and Somatotype theory.

People having different bad experiences during childhood are prone to develop deviant IDs. The data of such reported child victimization is to be updated on technologies using artificial intelligence so that the deviances can be identified due to deviant IDs, Egos and Super egos. This monitoring can give early identification of small patterns of deviances which are the alarms of big deviances resulting in big crimes.

Aggressive deviant behavior is learnt by operational interconnectivity of three factors such as family interactions, environmental experiences and mass media according to the Behavioral Theory. This postulate also proposes a new mode of artificial intelligence assisted crime detection. Information based on the basis of three factors of family interactions, environmental experiences and mass media which can trigger the deviances must be updated regarding people living in society so that such individuals can be identified which can indulge in criminality for instance, children who are brought up in broken families, having step-parents etc.

The technological driven deep monitoring can help in early crime detection and its prevention. Artificial intelligence driven models can be generated to read out the different involvement patterns of individuals and monitor them so as to predict the probability of criminality.

Artificial Intelligence can be used to take assistance to monitor cognitive defects in humans and also check their deviances. These Cognitive defects are responsible for wrong decisions taken by the criminals in their day-to-day activities. These cognitive defects are the root cause of emotional distress and criminality in society.

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[27] Criminology: Social Disorganisation Theory Explained available at https://www.linkedin.com/pulse/criminology-social-disorganization-theory-explained-mark-bond/

[28] Social Disorganisation Theory: Examples, Pros & Cons available at https://helpfulprofessor.com/social-disorganization-theory/

[29] SubCultural theory available at https://www.studocu.com/in/u/34680923?sid=01670837063

Technological monitoring of the day-to-day activities of people belonging to different beliefs areto be done so as to prevent the possibility of communal riots due to gaps in different belief systems and no acceptance of others' beliefs. All the societies having heterogeneous cultural setup must beminutely monitored. Technological assisted monitoring through CCTV cameras etc. are required in order to identify the possibility of cultural riots.

Economic stratification of the society can be identified through monitoring of bank accounts or the sources of earning. By deep study of earning status and the needs of every individual memberof family can help to identify the stimulus of economic crime. By helping these members of societyin fulfilling their immediate needs can help to reduce the incidences of economic crimes in the society. Similarly in the cases where individuals are involved in high profile jobs having chancesof economic frauds should be deeply monitored so that they will not get a chance to show deviances leading to White Collar Crime or scams.

IV. CONCLUSION

Crime is inevitable in society. No society is free from crime. Theoretical understanding of crime causation is essential to understand the cause and nature of crime. Postindustrial society is dominated by cyberspace, artificial intelligence technology driven society, Rationality is the essence of the belief system. Crime can be restricted with the help of artificial intelligence; it is a new technique to curb crime in the society. Artificial intelligence is no doubt a good technique but it requires a pragmatic and realistic approach to implement crime detection and there is a need for special training to implement this technique in society. In order to implement this technique in society, there is a need to introduce a new department i.e. Crime Detection and Control department which has prime responsibility to detect crime with the help of artificial intelligence driven technology. This is most essential to reduce the criminality in the society.