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Project 4 - Use of Machine Learning in Justice System and Policing

Introduction:

While machine learning (ML) and artificial intelligence (AI) in concept has been around since the 1950s, the use of machine learning across various industries really began to gain popularity in the past two decades with computer and technology becoming faster, cheaper, and more accessible. Machine learning has gained popularity in the criminal justice system and policing due to the potential for more efficient and accurate sentencing for criminals, and better allocation of police resources to the communities that need it the most. However, bias in machine learning algorithms is a rising issue that can cause unintentional discrimination towards certain groups of people, such as minority groups in the case of the justice system.

Current Technology/Uses:

Machine learning algorithms excel at analyzing a multitude of data and detecting patterns that humans are susceptible to missing. In addition, the elimination of human decision making, in theory, will produce more accurate results free of human bias. These traits have led to the adoption of machine learning and artificial intelligence in various aspects of the criminal justice system and law enforcement.

One popular use of machine learning in the justice system are Risk Assessment Instruments (RAI). These data driven tools are designed to predict a criminal's/defendants' potential for future misconduct based on their personal information and criminal history. Typically, the RAIs produce three risk scores for an individual: (1) the risk that they will be convicted for any new crimes, (2) the risk that they will be convicted for a new violent crime, (3) the risk that they will fail to appear in court. These risk assessment scores are then used to give justice officials recommendations on decisions such as: should the individual be incarcerated before/after the trial, how long should incarceration be, how much should bail be, can the individual be released on probation, etc. This use of machine learning brings the potential for accuracy, fairness, and consistency to the justice system.

Artificial intelligence is also being used in more and more police departments to determine how to allocate their resources where it would be the most beneficial to prevent crime, rather than simply respond to it. With hundreds to thousands of crimes happening simultaneously for any given police department, it is very difficult to track and analyze patterns in the crimes. AI is being used to determine locations where crimes are more likely to occur based on previous patterns, identify criminal networks, and monitor irregular/suspicious behavior. AI is also being used for facial recognition and video analysis, which machines can do hundreds of times faster and better than humans.

Problems of Artificial Intelligence in Criminal Justice System :

In an ideal world, AI would be perfect at predicting the risk of repeat offenders, recommending prison sentences, and determining future crime. However, artificial intelligence is still prone to errors and biases since the data and information that is used to build these algorithms can have biases and may not be complete. Imperfect data will create imperfect predictive algorithms. An example is the use of facial recognition identifying suspects. Studies have shown that facial recognition is more prone to fail for dark-skinned individuals, in some cases professional workers such as doctors or politicians being labeled as convicted criminals.

In theory, the aforementioned risk assessment algorithms help reduce bias or emotions in a judge's decision making since the algorithm is data driven. But the data used to train these models is historical criminal data. There lies the problem with machine learning in the justice system. Historically police have targeted low-income and minority communities, so a majority of crime data will pertain to these groups. The machine learning models will then use this information that seemingly shows low income and minorities are more dangerous, and provide harsher punishments to these individuals. It's a cycle that if used in its current state will amplify that unfairness to the already marginalized communities. Additionally, many of these algorithms are proprietary, so the public does not have transparency as to how these algorithms are really making decisions.

This bias in the models is an issue before even stepping foot into a courtroom. A common tool used by many police departments is PredPol. A predictive tool that breaks a city or district into small 500 ft by 500 ft sections and forecasts when crimes are likely to occur in those sections. This allows for police departments to focus their resources on those areas that are more likely to have more crime. Again, the bias towards low income and minority communities will result in police monitoring these communities more closely and making more arrests. But aside from crimes actually being committed, over-policing of these communities can result in police harassing innocent citizens as well just because they look a certain way and live in an area deemed dangerous by the software. It's a terrible cycle that will continue to grow if measures aren't taken to prevent the misuse of this software.

Conclusions:

The use of machine learning and artificial intelligence in the justice system and policing has much promise, but there is still much work to be done in improving these systems before they can become more prevalent around the nation. Some question the true effectiveness of these softwares, such as the Los Angeles Police Department that recently ended their use of the PredPol software. If perfected, artificial intelligence could save millions of dollars in imprisonment and policing, while also actually making the country a safer place to live while giving minor criminals the ability to have meaningful lives.

References:

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