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The Logic of Analyzing a Problem:

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The problem you are analyzing: Crime Prediction in a city using archived data

Created Friday Apr 8 2016, 8:28 AM

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The logic of the question you have reasoned through can be found here. Beside each of your answers, you will find checkpoints, or guidelines for making sure you have reasoned well through each element. If you are unclear as to how to interpret any of these "checkpoints," read more deeply about the elements of reasoning and intellectual standards.

Statement of the problem:

Crime can happen anywhere and at any time. Some are life threatening and some are petty theft. From the documented data and given factors, there is a possibility to predict the category of crime. The dataset used for the prediction is based on neighborhood of San Francisco crime reports provided by city and county of San Francisco. The problem is to predict the category of crime based on the past location and time which can be used by the San Francisco police department to reduce the crime rate.

- The key **question** at issue is...

The main issues pertaining to prediction of crime category could be:- How we can relate the type of crime with a given information of time and location?- Will the crime be from the same category in the future, if it happens to be in the same location?- How big the dataset should be?- How much time span should we consider for descent crime prediction?- Which attributes are important to predict the crime category?-How the missing data, redundant data and outliers impact the model?-Is the dataset contains genuine data and is it from a genuine source?- Will the model be able to produce a generalized prediction?

Clarify the question: Have I stated the question as clearly and precisely as possible? Have I stated the question so as to detail the complexities in it? Does my formulation of the question give me [or others] some unjust advantage?

- The **purpose** of reasoning through the issue is...

The purpose of predicting the crime has many folds: First to identify promising targets for police intervention and to prevent or solve crime enabling several advantages to law enforcement agencies. Secondly predicting the crime well in advance allows police department to make better use of limited resources. Prediction techniques can also be

Check your purpose: Have I stated the question as clearly and precisely as possible? Have I stated the question so as to detail the complexities in it? Does my formulation of the question give me [or others] some unjust advantage?

used by the people living in infamous locations to avoid visiting few place during certain time intervals where the probability of crime is more. In a survey by National Crime Victimization Survey it has been found that night crimes are more dangerous than day crimes. The prediction can also be used to trace and identify crime groups or in some cases, save individuals who are likely to become victims of crime.

- The **information** I need to use in answering this question is...

As of now there are not many crime prediction software in the market. The one that is available are very few like IBM SPSS Crime prevention and prediction, PredPol etc. For the successful implementation of the prediction, the working of the prediction software must be studied. The dataset that is used for the crime classification must have relevant attributes that help us to identify the category of crime.

Assess your information: Have I included all the important relevant information? Have I left out any relevant information I would rather not have to consider? Have I checked to see that my information is accurate?

- The **assumptions** I am making when reasoning through this issue are...

We are assuming that the prediction will help the police department to pin point category of crime. We assume that the prediction can help to stop the crime before it can even happen. We assume that the prediction can be possible with the existing technology. The dataset is large enough to make the model with good accuracy. We assume that it will reduce the crime rate. We assume that it will ensure the safety of the people.

Identify assumptions: Do I recognize the beliefs I have taken for granted in reasoning through this issue? In other words, have I uncovered the important assumptions guiding my thinking in this situation? Have I questioned assumptions that may not be based in sound reasoning? Am I holding onto assumptions that cannot be justified based on the evidence?

- The primary **concepts** guiding my reasoning about this issue are...

Before applying the classification, there is a need to understand the notion related to the crime. The meaning and severity of each crime like personal, property, inchoate, statutory crimes must be researched. The different predictive methods that are available must be analyzed. We must understand the accuracy of existing prediction packages and how well it can complement to our crime prediction.

Understand the concepts: Have I identified the main concepts guiding my thinking through this issue? Am I even clear about what a concept is and the role concepts play in human thinking? Have I distorted some idea to fit my vested interest? Do any of my concepts need to be questioned? Have I thought deeply about the concepts I am using? Am I using concepts superficially?

- Some important **implications** of reasoning through this problem well or poorly are...

The positive implications of predicting crime will help police department to prevent the crime before it happens. With help of the developed model, we can be able to forecast the likelihood of most occurring crimes in the city. By predicting the crime category under a given time and location, we can able to figure it out the most happening crimes in city, and which places are mostly effected by crime. The consequences of such forecasting won't completely

Recognize the implications: Have I traced out the important implications in this situation? Have I thought through the potential negative as well as positive implications connected with this issue? Are there implications I would rather not face, and so I am refusing to consider them? Have I anticipated the implications of the obvious implications, and then the implications of those implications, and the implications of those implications, and so on, as well?

lead to arrest of criminals but to disrupt the law-breaking before it occurs. With this information, the government of that city would implement more laws and amendments on safety and other major concern. Furthermore the city will be more crime free and safe. The drawbacks of forecasting the crime rate, is that the department rely on the prediction blindly e.g. if a person is carrying a tool or rope in forecasted area, he/she would be doubted as a criminal even though he/she is innocent. Some others concerns are one particular model cannot predict all the instance of crime

- The **point of view** from which I am looking at this situation is...

In the point of view of police department this model would just act as a means to help them to predict the crime category, it does not gather any information to frame the criminal justification or lead to any actions like arrest, rather it would make them to use limited resources just like man power and equipment. Another point of view is considering people-This model will help them to take necessary precautions before moving on to new areas. By using this model it will create more awareness among criminals where the crime rate is high. To support to this model Government should recognize the potential of such models as it is helping to create awareness and security in city. Our point of view is that, even if the forecasting fails by any chance, the police can still keep track or monitor that area for other possible crime activities and also the crime victims by past records. Over predicting the crime will also lead to take out the liberties and freedom of citizens.

Consider your Point of View: Have I considered all important viewpoints relevant to this situation before formulating my viewpoint? Have I inadvertently distorted some other viewpoints in order to maintain my viewpoint? Have I articulated and considered other ways of looking at the situation, in good faith, before coming to conclusions about how to think and how to act?)

- In reasoning through this issue, the main **inferences** I have made and **conclusion(s)** I have come to, in terms of how to deal with the issue are...

We have inferred from our dataset while preprocessing that the dataset should contain high variance as it will give us more accuracy, therefore the model should be applied to the areas where the crime rate is very high. Application of the model to the place where the crime is less might lead to incorrect prediction as the same model cannot be used for all prediction or with less data. As police department will likely use the prediction model and there will be new data or new crimes happening it is mandatory to preprocess the new data. We also need to further investigate other factors that can possibly influence the crime apart from past history such as criminal psychology and the power of criminals to influence the government.

Analyze your interpretations: Am I clear about the inferences I have made in coming to this conclusion? Have I considered the fact that any or all of my inferences may be more or less sound? Do my inferences clearly follow from the evidence, or have I failed to consider important information in coming to my conclusions? Can I articulate the assumptions that have led to my inferences? Do I have a vested interest in coming to a particular conclusion, and if so, has this clouded my judgment?

Summary:

While reasoning through the logic of this problem, I have gained the following insights and come to the

following decisions.

Although the prediction does not provide staggering decrease in crime rate, we can implement the prediction model to places where the crime rate is much higher inferred that there would be similar categories of crime. This could probably help to reduce at least few numbers in crime rates.

Save Conclusions / Finish Problem

If you are unclear as to how to interpret any of these "checkpoints," read more deeply about the elements of reasoning and intellectual standards. We suggest the following materials:

- [The Thinker's Guide to Analytic Thinking](#)
- [Critical Thinking: Tools for Taking Charge of Your Professional and Personal Life](#)
- [Critical Thinking: Tools for Taking Charge of Your Learning and Your Life](#)

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