# Crime Prediction using Deep Learning

Project Proposal
ELE494-09

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## I. Objective

The objective of our project is to develop a trained neural network that is capable of predicting where a future crime may occur and when it will occur within the city of Vancouver.

## II. Datasets

For this project we will be narrowing it down to a specific city in which we will be predicting crimes. The decision of which city to pick comes down ultimately to the one with the largest and most accesible dataset.

From our research we found a dataset on Kaggle that covers crimes in Vancouver from 2003 to 2017. It contains 530,652 records in total and the columns are as follows:

- Type of crime
- Year
- Day
- Hour
- Minute
- Block of crime
- Neighbourhood of crime
- X Co-ordinate of crime in UTM Zone 10
- Y Co-ordinate of crime in UTM Zone 10
- Latitude
- Longitude

In addition to this data we also find another dataset about weather conditions in Vancouver.

- Humidity
- Temperature
- Windspeed
- Date and Time

We hope to use a combination of these two datasets to predict crime based on multiple variables. By linking the weather conditions of the second dataset along with the time, date and location of the first we can try to understand if weather plays a role in the occurance of crime and type of crimes being commited.

## III. Network Inputs & Outputs

Our plan is to create a neural network where the main inputs will be date, time and weather conditions. The network will then use all this data and return a probability of crime occuring. It will also return information on where the crime is most likely to happen within the city of Vancouver.

We have not yet decided on what sort of network archiecture to use and we are keeping our options open. Some literature review is needed before arriving at a final decision.

## IV. Motivation

Such a neural network can help police and local municipality in predicting where crime occurs in the city and therefore they can prepare before hand on how to prepare police patrols and respond to a crime as quickly as possible.

## V. Conclusion

We believe that our project is capable of benefitting society as a whole as it can help reduce crime and help first responders. The datasets we found provide us with a multitude of variables to use during training and by the end we hope to have a successful deep learning network.

## VI. Links to Datasets

Vancouver Crime Dataset:
https://www.kaggle.com/wosaku/crime-in-vancouver

Vancouver Weather Dataset:
https://www.kaggle.com/selfishgene/historical-hourly-weather-data