Coding the Law

EID 101 Ethics Workshop Assignment

Instructions

An argument has sometimes been made that computer decisions are less "biased" than human decisions and therefore a computerized system makes more ethical decisions. This exercise probes the validity of that argument. You are designing an automated law enforcement system that will issue tickets to speeding drivers on a given stretch of "smart highway." This road contains sensors that determine vehicular speed and license plate readers that uniquely identify all vehicles.

Develop an algorithm (in a programming language of your choice, or Excel, or an algorithm that you manually implement) that determines the time and number of speeding ticket(s) to be issued to a driver. You are provided with two files. The first (driving_data.csv) contains a Comma Separated Value (CSV) series of time stamps and vehicle speeds, one sample per line (time in minutes, speed in MPH), taken from an automobile's on-board computer. The second file (speedlimit.csv) contains a matching series of timestamps and speed limits. The timestamp in this file indicates the time in minutes at which the vehicle encountered the given speed limit. Examine each file and construct appropriate logic to determine when violations occurred.

Below are extracts from the laws you are enforcing:

https://www.nysenate.gov/legislation/laws/VAT/1180

https://www.nysenate.gov/legislation/laws/VAT/1181

Penalties for Speeding | Governor's Traffic Safety Committee (ny.gov)

Your approach to coding the law and determining violations will vary by class section.

Sections A & B - Code what you believe to be the "letter of the law," e.g. a strict interpretation of the law.

Section C - Code the law based on the design specification on the next page.

Section D - Code what you believe to be the "intent of the law." e.g. an interpretation based on normal police law enforcement behaviors.

Your program or algorithm should determine the time that your software issued any ticket(s) and the total number of tickets.

There is no right answer for the number of ticket(s) to be issued to the driver, but your code should be based on the law and the per section guidance provided above. However, please make a list of at least 5 assumptions you made during the design and coding process. These assumptions should be based on your interpretation of the law and how you implemented it in code.

Deliverable – Complete the questionnaire at https://forms.cloud.microsoft/r/xQ1zwkhxeJ before class on Monday, October 6.

EID 101 Section D

“Coding the Law” Design Specification

Your algorithm should issue traffic tickets based on the following logic. You are to assume that the sensor is properly calibrated and the results are accurate within +-3 MPH, the maximum capability of the sensor. Only a single sample of exceeding the speed limit is required to issue a ticket, but tickets will only be issued if the driver has exceeded the speed limit by 13.0 MPH (for speed limits greater than 30.0 MPH) and 8.0 MPH (for speed limits of 30.0 MPH or less). This allowance is based on a 10.0 MPH and 5.0 MPH allowance, respectively, due to driver norms on the roadways where the data was collected and an assumption that the accuracy of the sensor falls 3.0 MPH against the driver, the worst case. At least 5.0 minutes must transpire before another ticket may be issued. Tickets may be issued immediately upon the start of the sensor data. As long as a ticket meets the above criteria there is no limit to the total number of tickets that may be given.