**INFO-3097 Mobile Programming**

**Final Project: Ticket Tron**

**Due:** Dec. 3rd, 2019

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**App Description**

Ticket Tron is developed to simplify the process of providing tickets for automobiles. This app would be useful for parking lot owners and parking enforcement to accurately and easily issue ticket infractions to automobiles. The user would be able to take a picture of the license plate on a vehicle and auto-generate a form with the appropriate information to give the vehicle owner a ticket. This would also save the form and allow the user to view the tickets they have issued during a shift. This app version currently only works for Canadian provinces and Territories.

**ML Kit Implementation**

The app uses ML Kit by reading the text displayed on license plates and returning the proper data in the required fields. The user takes a picture when generating a ticket and using Firebase Text Recognition the data is parsed and entered into the appropriate fields. The app recognizes the license plate province and license plate number to populate the fields.

**App Challenges**

One of the first challenges to handle was dealing with various license plate types and how they choose to display text. Some licenses have a more artistic approach then Ontario’s Blue Text on White Background. The more artistic look the license plate the harder it was to recognize the text due to conflicting markings on the plate. Newfoundland uses an artistic ‘f’ that cannot be recognized and gets read as “Newoundland”.

Initially the app planned on taking a picture of the back of a car to populate an entire form. However, due to all of the potential variables of the type of text that can appear on the rear end of a vehicle it proved to be more difficult than anticipated. Some car manufacturers have multiple logos that are images and not text, so we would have to build custom image recognition beyond our initial text recognition. The idea of populating the form with the vehicle’s manufacturer and model seemed achievable at first, but proved to be a more difficult goal to achieve for our project.

**Future Improvement**

After learning from the challenges we faced while developing the app, there are plenty of improvements we could make. To improve Ticket Tron in the future we would like to support all North American license plate types. We would like to expand the app to take pictures of the rear end of a car and be able to generate all of the fields required for a ticket. This would increase the efficiency of the app to handle all of the incoming data and be able to parse it for the required fields.

Ticket Tron would also be a much more appealing app to use if we included Location Services in the app to keep track of where the ticket occurred. Having location services included would be a great asset for a parking enforcement app.

Another improvement to Ticket Tron would be to have the tickets populate a database across all users. This would allow for all tickets to be viewed by a manager from all employees using the app. This would help a parking enforcement consolidate all of their tickets from different users and areas.