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Research Project Title

Collaborative Research Project to Coordinate the Data From the CRASH Predictive Analytics Program Between TDOT and TDOSHS

Purpose of the Project

The ultimate goal of the proposed work is to deploy a predictive analytics tool that will enhance the current CRASH Predictive Analytics application for highway safety patrol vehicles deployment. Towards this goal, the objectives of this research are to (i) identify the best practices for data storage, integration, and maintenance infrastructure for predictive modeling, (ii) develop state-of-the-art machine learning algorithms for predicting the risk of highway incidents, and (iii) collaborate with TDOT and THP to identify best practices for model integration with existing programs.

Scope and Significance

The scope of the research project includes the following tasks:

- Task 1. Assess the current state of highway incident response management by consulting with relevant stakeholders from TDOT and TDOSHS.
- Task 2. Perform a literature review of existing algorithms relevant to predicting incidents.
- Task 3. Build an inventory of datasets and define a strategy for data collection and storage.
- Task 4. Algorithm development.
- Task 5. Stakeholder feedback on preliminary algorithms & algorithm refinement.
- Task 6. Integration and roadmap development.
- Task 7. Final report summarizing the main findings of the work.

Expected Outcomes

The following are expected outcomes of this research project:

- Benefit to TDOT includes the ability to forecast the varying categories of incidents across space and time and allocate emergency response resources accordingly.
- Implementing the algorithm with existing TDOT operational tools and applications
- New innovation in predictive analytics algorithms to reduce response time to incidents

Time Period

The time period for the project is one (1) year.

Contact Information

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