



# Vehicle Intersection Control

MCMASTER UNIVERSITY

Project Goals - Revision 0

SE 4G06

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## Contents

1	Revisions . . . . .	3
2	Problem Statement . . . . .	4
3	Product Purpose . . . . .	4
4	Project Goals that Constitute Success . . . . .	4
5	Project Goals . . . . .	4
6	Extended Project Goals . . . . .	4

## List of Tables

1	Table of Revisions . . . . .	3
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## 1 Revisions

Date	Revision Number	Authors	Comments
October 14, 2016	Revision 0	Alex Jackson Jean Lucas Ferreira Justin Kapinski Matthew Hober Radhika Sharma Zachary Bazen	-

Table 1: Table of Revisions

## **2 Problem Statement**

Autonomous vehicles are unable to navigate intersections when two or more vehicles simultaneously arrive at a 4 way stop intersection. This is due to the lack of a decision making mechanism for deciding the order in which vehicles should proceed. Furthermore there is no mechanism to deal with a dynamically changing intersection over extended periods of time. VIC (Vehicle Intersection Control) seeks to solve the aforementioned issues as they apply to autonomous vehicles.

## **3 Product Purpose**

VIC will allow autonomous vehicles to identify intersections and form a unanimous consensus of the order in which vehicles should proceed through an intersection. In addition, VIC will be able to dynamically handle changing scenarios at an intersection without running into deadlock or stalemate situations. To ensure safety, VIC will allow cars to navigate through the intersection only after a unanimous consensus has been made.

## **4 Project Goals that Constitute Success**

The minimum requirements for success of this project are as follows:

1. The autonomous vehicle can identify lanes
2. The autonomous vehicle can identify an intersection
3. The system indicates the order in which vehicles can proceed through the intersection

## **5 Project Goals**

The goals that constitute success are as follows:

1. The autonomous vehicle can stay within its corresponding lanes
2. The traffic flow of the intersection is optimized
3. The autonomous vehicle can navigate through an intersection according to the order determined by VIC
4. The system follows the laws of the road
5. The system ensures that each vehicle is not waiting for an extended period of time

## **6 Extended Project Goals**

The goals that will exceed the definition of success are as follows:

1. The system is modular to allow integration into multiple autonomous vehicles
2. The system is capable of handling multiple intersection types
3. The system is capable of navigating an intersection with autonomous vehicles that have different intersection control algorithms