

Project Presentation

Implementing Intersection Behavior in STL (and beyond)

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Outline

- Goals
- Progress
- Future Direction

Goals

- Design procedure to govern car operation through an intersection
- Expand on current set of algorithms
 - Minimize time to reach goal
 - Piecewise linear dynamics

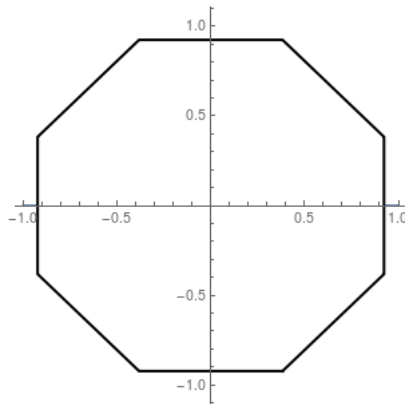


Figure: Piecewise linear scaling for direction

- Last term
- Different objective function
- Intersection
- Piecewise linear rotation

Optimized objective function

GIFs offline

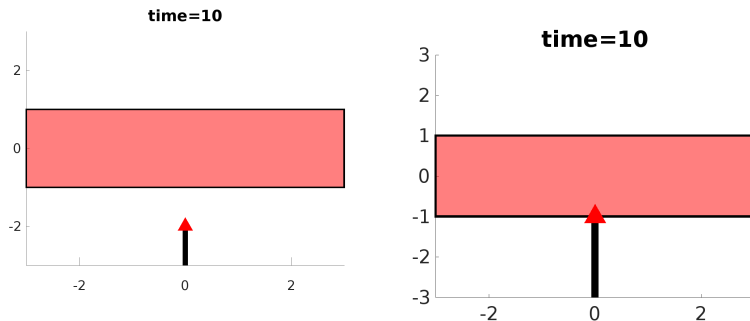


Figure: Before (left) and after (right) adding a penalty for late inputs

Intersection

GIFs offline

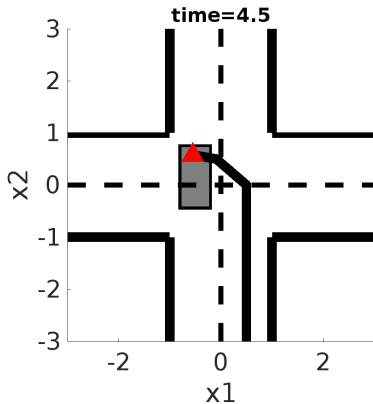


Figure: Penalty for violating specs is not high enough

Intersection Specification

```
    ev  (alw (x1(t) < -2))
and alw (    (x1(t) > 0 and x1(t) < 1)
             or (x2(t) > 0 and x2(t) < 1))
and alw (    abs(x1(t) - w1(t)) > 0.4
             or abs(x2(t) - w2(t)) > 0.7)
```

Future Steps

- Piecewise Linear
- Further refine penalty for late execution
- Longer examples
- Multiple components (e.g. turning, merging, and signals)

Questions?