CruiseAuto Project – Milestone 3

**ANSWER SHEET:** Algorithm Evaluation & Improvements

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# Part 1. Assignment Header

**Section and Team ID:** <replace this text with your SSS\_TT ID>

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Team Member Name** | **Purdue Career Account Login** | **Programmer Number** | **M3 Task Assignment** | **Detailed Description of the Work** | **Percent of Work** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# Part 2. Milestone 2 Feedback and Reflection

Strength: <answer here>

Limitation: <answer here>

How could the feedback from M2 lead to improvements? <answer here>

What concrete steps will you take to incorporate the M2 feedback to improve your algorithm?

<answer here>

# Part 3. Improve your Algorithm

All deliverables should be submitted to Gradescope after completing the milestone.

# Part 4. Parameter Output Comparison

## 4a. Noise Error Quantification

<insert your figure(s) here>

What considerations did you take when deciding how to display your plot(s)?

<answer here>

How well does the benchmark data follow the first-order response model? Provide evidence-based rationales to support your analysis.

<answer here>

## 4b. Evaluate your Algorithm using Benchmark Data

<insert your figure(s) here>

### Table 4b.1 - Results for Compact Hatchback Benchmark Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Benchmark Values** | **Algorithm Values** | **Percent Error** |
| Acceleration start time [s] |  |  |  |
| Time constant [s] |  |  |  |
| Initial speed [m/s] |  |  |  |
| Final speed [m/s] |  |  |  |

### Table 4b.2 - Results for Sedan Benchmark Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Benchmark Values** | **Algorithm Values** | **Percent Error** |
| Acceleration start time [s] |  |  |  |
| Time constant [s] |  |  |  |
| Initial speed [m/s] |  |  |  |
| Final speed [m/s] |  |  |  |

### Table 4b.3 - Results for SUV Benchmark Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Benchmark Values** | **Algorithm Values** | **Percent Error** |
| Acceleration start time [s] |  |  |  |
| Time constant [s] |  |  |  |
| Initial speed [m/s] |  |  |  |
| Final speed [m/s] |  |  |  |

### Table 4b.4 – Results for SSEmod

|  |  |  |
| --- | --- | --- |
| **Vehicle** | **from Benchmark Parameters (Part 4a)** | **from Algorithm Parameters (Part 4b)** |
| Compact Hatchback |  |  |
| Midsize Sedan |  |  |
| Large SUV |  |  |

# Part 5. ACC Performance Boundaries

<insert your figure(s) here>

Is the benchmark data within the acceptable performance boundaries of the ACC? Justify your answer with reference to the figures and any numeric results you believe are relevant.

<answer here>

# Part 6. Observations and Improvements

## Improvement #1

Parameters Targeted: <parameter(s) here>

Description of the Improvement:

<answer here>

Metrics to Determine Improvement:

<answer here>

Rationale for Improvement and Metrics:

<answer here>

## Improvement #2

Parameters Targeted: <parameter(s) here>

Description of the Improvement:

<answer here>

Metrics to Determine Improvement:

<answer here>

Rationale for Improvement and Metrics:

<answer here>

# Part 7. References

<list references for any external sources used here>

# Part 8. MATLAB Built-in Functions

Fill out the following information **for each** MATLAB built-in function that your algorithm uses that was not explicitly taught in class. Add additional rows as needed. If you did not use any new built-in MATLAB functions, then delete the table below and write “No new function used.”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name & Call (include inputs/outputs)** | **Where in your algorithm do you use the function?** | **Describe the inputs needed to run the function.** | **Describe the outputs from the function.** | **Describe the theory and/or mathematics behind how the function operates.** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |