Model Comparison - Test Specification Report

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Table of Contents

1. Comparison Tests

Test Details

Releases	Current (2019b)
Description	The aim of this report is to check congruences and differences between the dynamic and kinematic vehicle model. In all the comparisons, our dynamic model is considered as baseline. For the tests purposes it is not necessary to include equivalence criteria, indeed this will be a qualitative analysis.

External Inputs for Simulation 1

Name	File Path	Status
Free_evolution.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Free_evolution.mat	Successfully mapped inputs.
Only_throttle.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Only_throttle.mat	Successfully mapped inputs.
Constant_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Constant_steering.mat	Successfully mapped inputs.
Ramp_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Ramp_steering.mat	Successfully mapped inputs.

Name	File Path	Status
Small_sinusoidal-_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Small_sinusoidal_steering.mat	Successfully mapped inp-uts.
Big_sinusoidal_st-eering.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Big_sinusoidal_steering.mat	Successfully mapped inp-uts.
Combined1.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Combined1.mat	Successfully mapped inp-uts.
Combined2.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Combined2.mat	Successfully mapped inp-uts.

External Inputs for Simulation 2

Name	File Path	Status
Free_evolution.m-at	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Free_evolution.mat	Successfully mapped inp-uts.
Only_throttle.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Only_throttle.mat	Successfully mapped inp-uts.
Constant_steerin-g.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Constant_steering.mat	Successfully mapped inp-uts.
Ramp_steering.-mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Ramp_steering.mat	Successfully mapped inp-uts.
Small_sinusoidal-_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-a-voidance\Code\Files\Model Comparison T-ests\Small_sinusoidal_steering.mat	Successfully mapped inp-uts.

Name	File Path	Status
Big_sinusoidal_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Big_sinusoidal_steering.mat	Successfully mapped inputs.
Combined1.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined1.mat	Successfully mapped inputs.
Combined2.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined2.mat	Successfully mapped inputs.

Iterations

Name	Description	Details		
Free evolution	**Free Evolution** Test performed starting from an initial condition with input equal to 0	**Parameter Name**	**Value**	**Simulation Index**
		External Inputs	Free_evolution.mat	1
		Parameter Set	Free_evolution.mat	2
Only throttle	**Only throttle** Test performed keeping the steering angle equal to 0 and va-	**Parameter Name**	**Value**	**Simulation Index**
		External Inputs	Only_throttle.mat	1
		Parameter Set	Only_throttle.mat	2

Name	Description	Details		
	rying the throttle			
Constant steering	**Constant steering** Test performed keeping the throttle equal to 0 and giving a constant steering angle value	**Parameter Name**	**Value**	**Simulation Index**
		External Inputs	Constant_steering.mat	1
		Parameter Set	Constant_steering.mat	2
Ramp steering	**Ramp steering** Test performed keeping the throttle equal to 0 and giving a ramp steering angle signal (from 0° to 36°)	**Parameter Name**	**Value**	**Simulation Index**
		External Inputs	Ramp_steering.mat	1
		Parameter Set	Ramp_steering.mat	2

Name	Description	Details
Small sinusoidal steering	**Small sinusoidal steering** Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2 Hz and amplitude 5°	<table><tr><th>Parameter Name</th><th>Value</th><th>Simulation Index</th></tr><tr><td>External Inputs</td><td>Small_sinusoidal_steering.mat</td><td>1</td></tr><tr><td>Parameter Set</td><td>Small_sinusoidal_steering.mat</td><td>2</td></tr></table>
Big sinusoidal steering	**Big sinusoidal steering** Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2 Hz and amplitude 15°	<table><tr><th>Parameter Name</th><th>Value</th><th>Simulation Index</th></tr><tr><td>External Inputs</td><td>Big_sinusoidal_steering.mat</td><td>1</td></tr><tr><td>Parameter Set</td><td>Big_sinusoidal_steering.mat</td><td>2</td></tr></table>

Name	Description	Details
Combined 1	**Combined 1** Throttle signal with a pre-defined shape and constant steering angle	<table><tr><th>Parameter Name</th><th>Value</th><th>Simulation Index</th></tr><tr><td>External Inputs</td><td>Combined1.mat</td><td>1</td></tr><tr><td>Parameter Set</td><td>Combined1.mat</td><td>2</td></tr></table>
Combined 2	**Combined 2** Ramp steering angle signal with a constant throttle	<table><tr><th>Parameter Name</th><th>Value</th><th>Simulation Index</th></tr><tr><td>External Inputs</td><td>Combined2.mat</td><td>1</td></tr><tr><td>Parameter Set</td><td>Combined2.mat</td><td>2</td></tr></table>