Documentation Parkassist

Graphische Programmierung und Simulation

at the Cooperative State University Baden-Württemberg Stuttgart

by

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Acronyms

AABB Axis-Aligned Bounding Box

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1 Introduction

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2 D1: Time estimate based on three point estimation

Table 2.1: Three point estimation of effort for meeting requirements

Requirement	Optimistic	Likely	Pessimistic	<T>	sigmahoch2	Actual
D1	.	.	.	.		.

3 D2: Feasibility study

The aim of the feasibility study is to analyse whether the introduced model in section 1 can be implemented based on the given formulas.

$$\frac{\partial v}{\partial t} = -c - b * p \tag{3.1}$$

$$\frac{\partial x}{\partial t} = v \tag{3.2}$$

- Minimale Geschwindigkeit 0,29km/h beachten -> in m/s umrechnen
- Switch -> wenn Geschwindigkeit kleiner 0,29 folgt daraus Geschwindigkeit = 0
- Screenshot Simulink Modell und Ergebnis
- R5 auch beachtet

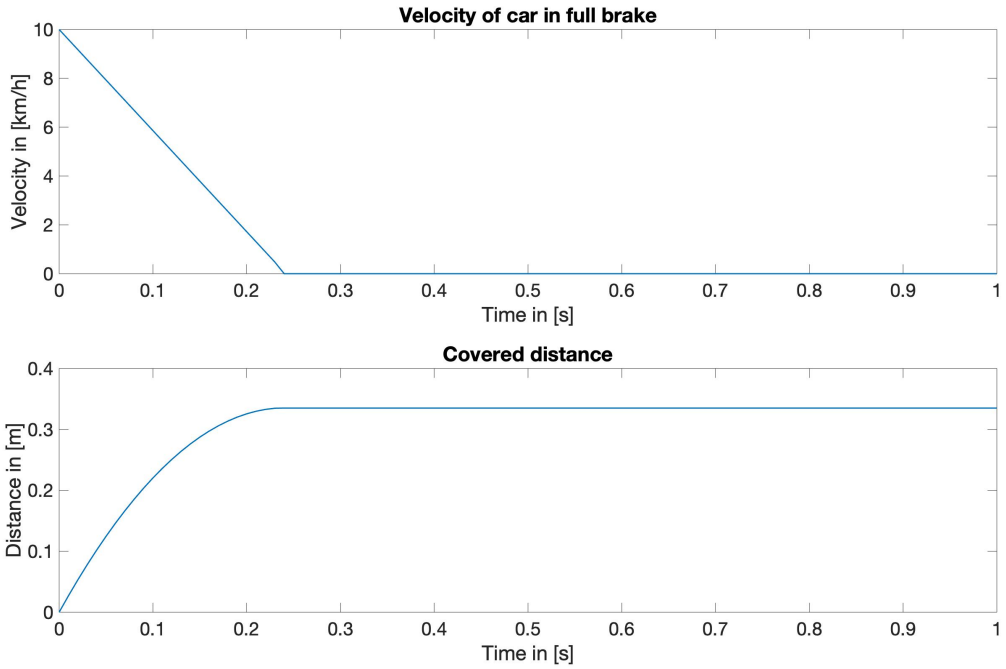

Figure 3.1: UML diagram of the architecture of the software tool

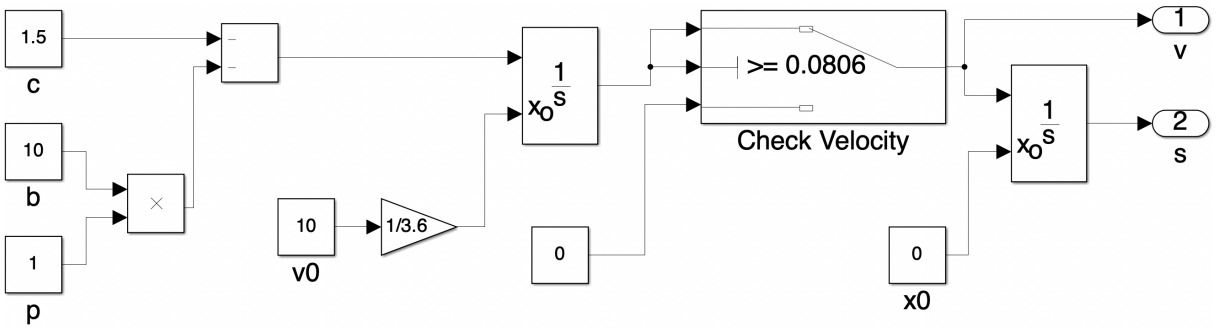

Figure 3.2: Simulink Modell der Differenzialgleichungen

4 D3: Analysis of human velocity profile

1. Import in Matlab

2. entschieden Durchschnitt der vier Radgeschwindigkeiten zu nehmen (vllt. vor nachteile) und so auf die Geschwindigkeit des Autos näherungsweise zu bestimmen

todo hier plot von gesamtgeschwindigkeit

idee: verzögerungsphasen extrahieren um so auf "menschliche" negative beschleunigung zu schließen problem: verrauschte messdaten -> dadurch ständiger wehcsel positive negative beschleunigung

lösung: moving average filter zum glätten der messwerte dann extrahieren der negativen beschleunigungen

5 D4*: Consideration of uneven parking spaces

6 D5: Discussion of inaccuracies in velocity measurement

validate findings by numbers from simulation

7 D6: Implementation of pulse signal in Simulink

8 D7: Transfer of Simulink model to ASCET

9 D8: Implementation of pule signal in ASCET

10 D9: Implementation of unit tests for ASCET model parts

11 D10: Development and implementation of a system test environment for ASCET simulation

12 D11*: Plausibility check comparing measured velocities and distances

13 D13*: Impact of inaccuracies

14 D14*: Reflection