

.e\*.in) ,or -eri,ica.ion o, co ' ;le% cha\*\*i\*-con.rol \*9\*.e' \*† 3he 'e.hod\* are deri-ed ,ro '  
co ' ;u.er-)a 'e ;rinci;le\* and re)ard .he \*9\*.e' under .e\*. a\* an o; ;onen. .ha. i\* de,ea.ed <hen  
.he \*;eci,ica.ion i\* -iola.ed† 3he 'e.hodolo)9 i\* de' on\*.ra.ed on an au.o-codin) i' ;le' en.a.ion  
o, a 5rake-5lendin) ,unc.ion ,or a hea-9 -ehicle, in co' 5ina.ion <i.h a \*i' ula.ion 'odel  
i' ;le' en.ed in Modelica† I. i\* \*ho<n .ha. a -a\*. nu' 5er o, \*cenario\* can 5e anal9=ed <i.h  
' odera.e ' anual e,,or., and .ha. re\*ul.\* corre\*;ondin) .o hi)h-co-era)e \$MEA > \$3A

-i \$H.



**Best Scenario**

3he .e\*. con\*i\*.o, a dri-er .ha. 5rake\* and \*.eer\* .he -ehicle+ 4ear \*hi,(in) i\* 'ade au.o 'a.icall9+ 3he Dri-er can )i-e in;u.\* accordin) .o .he .a5le 5elo<+

**Drivers**

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/ , (	'	> ! &(9! &-! &*9?
. A .	'	> ! &9?

**6 V.H'C0 . M\*+ . 0**

3o .e\*. and -eri,9 .he 5rake-5lendin) ,unc.ion i. i\* nece\*\*ar9 .o \*i' ula.e i.\* o;era.in) en-iron 'en. includin) .he .rac.or .o<in)--ehicle, a dri-er, and .he road+ 3hi\* en-iron 'en. ' u\*. ;roduce reali\*.ic re\*;on\*e\* .o .he con.rol ac.ion\* co ' ;u.ed 59 .he ,unc.ion+ \$or .hi\* ;ur;o\*e a 'odel i\* 5uil. u\*in) .he Modelica-5a\*ed .ool\* D9'ola and ?ehicle D9na 'ic\* Li5rar9 , and + Modelica i\* an o;en-\*;eci.ica.ion hi)h-le-el o5/ec.-orien.ed and co ' ;onen.-5a\*ed lan)uaje de\*i)ned ,or ' ul.i-do 'ain 'odelin) ,or \*i' ula.ion o, co ' ;le% \*9\*.e ' \*+ Modelica i\* de\*i)ned ,or acau\*al and e:ua.ion 5a\*ed 'odelin), <hich 'ake\* .he 'odel\* hi)hl9 reada5le and reu\*a5le+ An ou.\*andin) ,ea.ure o, Modelica-5a\*ed \*olu.ion\* in .he con.e%. o, -eri.ica.ion .e\*.in) i\* .he e%;o\*ed and 'odi,ia5le 'odel \*ource code in co ' 5ina.ion <i.h .he hi)h-le-el 'odel de\*cri; .ion\*+ l. i\* ;o\*\*i5le .o -ie< and 'odi,9 or e%.end .he i ' ;le 'en.a.ion o, co ' ;onen. and \*9\*.e ' 'odel\*+ In .hi\* <a9 in\*.ru 'en.\* can 5e added .o .he -ehicle 'odel, \*uch a\* \*en\*or in\*.ru 'en.\* ,or cri.eria e-alua.ion, and in\*.ru 'en.\* ,or in;u. e%ci.a.ion and ;ara 'e.er -aria.ion\* .o de\*cri5e o;era.in) condi.ion\*, .olerance -aria.ion\*, and ,aul.

in/ec.ion+ \$i)ure 8 \*ho<\* .he .rac.or ' odel and .he 'ain ;o<er.rain, 5rake\*, and cha\*\*i\* \*u5\*9\*.e ' \* , and .he in\*.ru 'en.\* u\*ed 5e\*.Wea-er+ 3he ;o<er.rain 'odel include\* a )ear50%, en)ine re.arde, dri-eline re.arde, and dri-eline <i.h ,inal )ear and di,,eren.ial+ 3he 5rake \*u5\*9\*.e ' include\* co ' ;onen.\* ,or \*er-ice di\*k-5rake\* <i.h ABS+ 3he cha\*\*i\* con.ain\* ,ron. and rear a%le\*, <i.h \*eerin), ca5in, ,ra 'e, and <heel\*+ 3he -ehicle run\* on an in,ini.e ;lane <i.h con,i)ura5le inclina.ion and \*ur,ace ,ric.ion+ 3he 'odel con.ain\* a5ou. \*e-en .hou\*and e:ua.ion\* and "3 con.inuou\* \*a.e\*+ l. i\* .ran\*la.ed in.o @-code u\*in) .he D9'ola inline .ra;e=oid in.e)ra.ion ,ea.ure ,or )enera.ion o, e.,icien. real-i 'e\* i' ula.ion code+ l. i\* .hen co ' ;iled and linked in.o a DLican

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i: À Æ ß % \*



