

1) Family number: 42236092 (US2008243327A)

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**Title:** VEHICLE SAFETY SYSTEM WITH ADVANCED TIRE MONITORING

**Priority:** US20070693225 20070329

| Family: | Publication number | Publication date | Application number | Application date |
|---------|--------------------|------------------|--------------------|------------------|
|         | US2008243327 AA    | 20081002         | US20070693225      | 20070329         |
|         | US7873449 BB       | 20110118         | US20070693225      | 20070329         |

**Probable Assignee:** FORD GLOBAL TECHNOLOGIES LLC

**Assignee(s):(std):** BUJAK CHRISTOPHER R ; CUDDIHY MARK A ; FORD GLOBAL TECH ; RAO MANOHARPRASAD K

**Assignee(s):** FORD GLOBAL TECHNOLOGIES ; FORD GLOBAL TECHNOLOGIES LLC

**Inventor(s):(std):** RAO MANOHARPRASAD K ; BUJAK CHRISTOPHER R ; CUDDIHY MARK A

**Agent(s):** DICKINSON WRIGHT PLLC; FREDRICK; ANGELA M

**International class**  
(IPC 8-9): B60C23/00 G06F19/00 (Advanced/Invention);  
G01M17/00 (Advanced/Non-invention);  
G06F19/00 (Core/Invention)

**CPC:** B60C23/0481 B60W30/12 B60R2021/01327 B60W2530/20

**European class:** B60W30/12 L60R21/0132W L60W530/20

**US class:** 340/442 340/442S 701/29 701/29P 701/33.7 701/33.700P 701/41 701/71 73/146

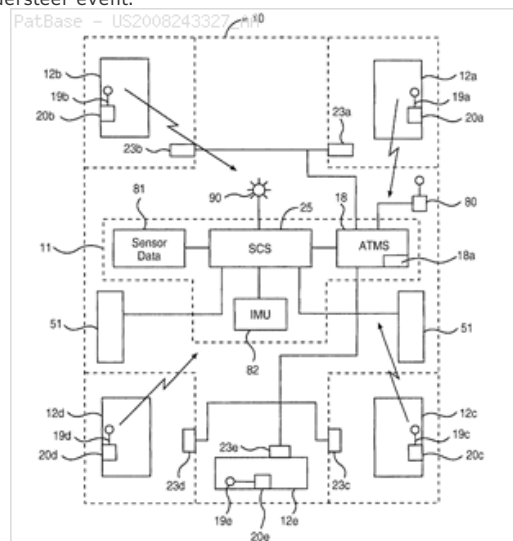
[Classification Explorer](#)

**Cited documents:** WO05095133 A1, US7594433 BB, US7119670 BB, US7020552 BB, US6917050 BB, US6424907 BA, US6397127 BA, US6278361 BA, US6259360 BA, US5825286 A, US4574267 A, US2007156312 AA, US2007112477 AA, US2006136111 AA, US2006064218 AA, US2006041336 AA, US2006027412 AA, US2005154509 AA, US2005090938 AA, US2005085987 AA, US2005038589 AA, US2005033549 AA, US2005033486 AA, US2005033459 AA, US2004064246 AA,

**Forward Citations:** WO18109443, WO17160275, WO16120019, WO15121639, WO13181631, WO13162446, WO11121334, US9925837, US9916702, US9862240, US9834213, US9672713, US9643460, US9633537, US9610810, US9607496, US9547969, US9542824, US9393845, US9315078, US9230419, US9139054, US9123250, US9073393, US9067527, US9008896, US8938367, US8886489, US8849500, US8742915, US8718868, US8594900, US8437907, US8040228, US8037744, US2017358155, US2016355152, US2016288594, US2016137201, US2016016445, US2015161893, US2014195115, US2014180530, US2014070935, US2013282233, US2013278771, US2013006440, US2012319832, US2012173073, US2012025964, US2010288468, US2010145567, US2009027182, US2008269993, US10417913, US10286923, US10147246, US10046729, KR20170113593, KR101995354, JP6526818, JP2018506470, JP2013028338, JP11044395, EP3105085, EP2552711, EP2082940, DE102012015188, DE102011122825, DE102011009464, DE102011009464, DE102009043267, CN107921940, CN106274308, CN102896983, CN102849072, CN102849072,

**Abstract:**

A control system (11) for a vehicle (10) includes vehicle dynamics sensors (35 - 47) providing a vehicle dynamics signal. Tire monitoring system sensors (20) in each wheel generate tire signals including temperature, pressure and acceleration data. A controller (26) communicates with the tire monitoring system sensors (20) and at least one vehicle dynamics sensor, and generates a tire abnormality value as a function of the multi-axis acceleration data of the tire signals. Tire multi-axis acceleration data is also used to detect a roadway departure, and an oversteer or understeer event.



2) Family number: 42236103 (US2008243334A)

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**Title:** VEHICLE CONTROL SYSTEM WITH ADVANCED TIRE MONITORING

**Priority:** US20070693175 20070329 US20110215032 20110822 US20110215042 20110822

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2008243334 AA    | 20081002         | US20070693175      | 20070329         |
| US2011301821 AA    | 20111208         | US20110215042      | 20110822         |
| US2011307147 AA    | 20111215         | US20110215032      | 20110822         |
| US8032281 BB       | 20111004         | US20070693175      | 20070329         |
| US8255117 BB       | 20120828         | US20110215032      | 20110822         |
| US8255118 BB       | 20120828         | US20110215042      | 20110822         |

**Probable Assignee:** FORD GLOBAL TECHNOLOGIES LLC

**Assignee(s):(std):** BUJAK CHRISTOPHER R ; CUDDIHY MARK A ; FORD GLOBAL TECH ; RAO MANOHARPRASAD K ; FORD GLOBAL TECHNOLOGIES

**Assignee(s):** FORD GLOBAL TECHNOLOGIES ; FORD GLOBAL TECHNOLOGIES LLC

**Inventor(s):(std):** BUJAK CHRISTOPHER R ; CUDDIHY MARK A ; RAO MANOHARPRASAD K

**Agent(s):** DICKINSON WRIGHT PLLC; FREDRICK; ANGELA M

**International class (IPC 8-9):** B60C23/00 B60G17/016 B60G17/0165 B60G17/018 B60G17/019 B60T8/171 G01M17/02 G06F17/00 (Advanced/Invention); B60G17/015 (Core/Invention)

**CPC:** B60C23/002 B60G17/0165 B60G17/018 B60G17/019 B60G17/0195 B60G2400/0521 B60G2400/0522 B60G2400/0523 B60G2400/102 B60G2400/104 B60G2400/204 B60G2400/252 B60G2400/33 B60G2400/34 B60G2400/39 B60G2400/41 B60G2400/44 B60G2400/52 B60G2400/60 B60G2400/73 B60G2400/821 B60G2401/904 B60G2600/04 B60G2600/044 B60G2600/18 B60G2600/1882 B60G2600/70 B60G2800/162 B60G2800/91 B60G2800/912 B60G2800/9124 B60G2800/92 B60G2800/984

**European class:** B60G17/0165 B60G17/018 B60G17/019 B60G17/0195 L60G400/0521 L60G400/0522 L60G400/0523 L60G400/102 L60G400/104 L60G400/204 L60G400/252 L60G400/33 L60G400/34 L60G400/39 L60G400/41 L60G400/44 L60G400/52 L60G400/60 L60G400/73 L60G400/821 L60G401/904 L60G600/04 L60G600/044 L60G600/18 L60G600/1882 L60G600/70 L60G800/162 L60G800/910 L60G800/912 L60G800/9124 L60G800/920 L60G800/984

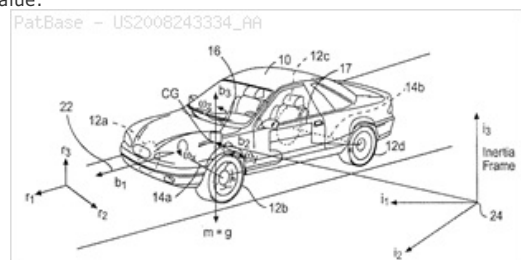
**US class:** 303/152 303/157 340/442 701/37 701/37P 701/70 701/70P

[Classification Explorer](#)

**Cited documents:** WO05095133 A1, US7766354 BB, US7739019 BB, US7443288 BB, US7286909 BB, US7203579 BB, US7020552 BB, US6962075 BB, US6941213 BB, US6882923 BB, US6424907 BA, US6397127 BA, US6278361 BA, US5269186 A, US2006136111 AA, US2006064218 AA, US2006041336 AA, US2006027412 AA, US2005154509 AA, US2005090938 AA, US2005085987 AA, US2005038589 AA, US2005033549 AA, US2005033486 AA, US2005033459 AA, US2004064246 AA,

**Forward Citations:** WO18028853, WO17167827, WO13121022, WO13078093, WO13034561, WO12071379, WO12071379, WO12002878, US9988057, US9925841, US9902379, US9855814, US9844983, US9809078, US9707814, US9702424, US9702349, US9694639, US9676244, US9662955, US9662954, US9610809, US9597940, US9597939, US9550404, US9527362, US9511634, US9463678, US9440507, US9327572, US9315078, US9278588, US9205717, US9174508, US9168831, US9129523, US9008896, US8887562, US8593273, US8565967, US8437907, US8214106, US7945362, US2017174035, US2017087950, US2017032592, US2017018124, US2016059660, US2015066307, US2015019102, US2014350835, US2014222287, US2014180530, US2014117598, US2014070935, US2013282233, US2013124050, US2011035091, US2010292894, US2010145567, US2009254249, US2008319623, US10406884, US10377371, US10315481, US10262477, US10262473, US10173489, US10160276, US10155426, US10124709, US10086835, US10029534, US10005335, GB2494526, FR3074124, FR3043375, FR3043375, EP3492286, EP3336645, EP3309033, EP3168070, EP2814677, EP2783298, EP2758260, EP2585321, EP2585321, EP2585321, DE102017209751, CN107199837, CN107199837, CN106004882, CN106004882, CN104276162, CN103221799,

**Abstract:**  
A control system (11) for a vehicle (10) includes vehicle dynamics sensors (35 - 47) providing a vehicle dynamics signal. Tire monitoring system sensors (20) in each wheel generate tire signals including temperature, pressure and acceleration data. A controller (26) communicates with the tire monitoring system sensors (20) and at least one vehicle dynamics sensor, and generates a roadway surface condition estimation value as a function of the multi-axis acceleration data of the tire signals. The roadway surface condition estimation value is transmitted to a suspension control system (33) to adjust the vehicle suspension characteristics in response to the roadway surface condition estimation value.



### 3) Family number: 42236106 (US2008243335A)

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**Title:** VEHICLE STABILITY CONTROL SYSTEM WITH TIRE MONITORING

**Priority:** US20070693131 20070329

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2008243335 AA    | 20081002         | US20070693131      | 20070329         |
| US7778741 BB       | 20100817         | US20070693131      | 20070329         |

**Probable Assignee:** FORD GLOBAL TECHNOLOGIES LLC

**Assignee(s):(std):** BUJAK CHRISTOPHER R ; CUDDIHY MARK A ; FORD GLOBAL TECH ; RAO MANOHARPRASAD K

**Assignee(s):** FORD GLOBAL TECHNOLOGIES ; FORD GLOBAL TECHNOLOGIES LLC

**Inventor(s):(std):** RAO MANOHARPRASAD K ; BUJAK CHRISTOPHER R ; CUDDIHY MARK A

**Agent(s):** DICKINSON WRIGHT PLLC; FREDRICK; ANGELA M

**International class (IPC 8-9):** B60G17/016 B60G17/0185 B60T7/18 B62D6/00 G05D1/00 (Advanced/Invention); B60G17/015 B60T7/16 B62D6/00 (Core/Invention)

**CPC:** B60C23/0408 B60T7/22 B60T8/1725 B60T8/1755A B60T2230/03 B60T2240/06 B60W30/04 B60W2420/52

**European class:** B60C23/04C B60T7/22 B60T8/172C B60T8/1755F L60T230/03 L60T240/06 L60W30/04 L60W420/52

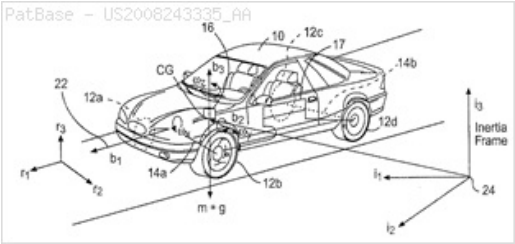
**US class:** 340/440 340/442 701/1 701/29 701/31.4 701/32.9 701/38 701/38P 701/39 701/39S 701/41 701/41S 701/70 701/71 701/71S

[Classification Explorer](#)

**Cited documents:** WO05095133 A1, US7020552 BB, US6424907 BA, US6397127 BA, US6278361 BA, US2006267750 AA, US2006136111 AA, US2006064218 AA, US2006041336 AA, US2006027412 AA, US2005154509 AA, US2005090938 AA, US2005085987 AA, US2005038589 AA, US2005033549 AA, US2005033486 AA, US2005033459 AA, US2004064246 AA,

**Forward Citations:** WO17048762, WO15114437, WO14179640, WO14179638, WO12035121, US9975391, US9963143, US9662954, US9623877, US9616900, US9517665, US9260096, US9205717, US9126459, US9020727, US8897957, US8880294, US8775047, US8755972, US8718868, US8589049, US8352120, US8258931, US8255119, US8244442, US8244437, US8229639, US8145402, US8046137, US8014922, US8005591, US7890233, US7885750, US7860634, US2017113506, US2016176246, US2013151085, US2013085639, US2013006440, US2012253608, US2012212043, US2012203438, US2012173091, US2012022759, US2011202241, US2011106335, US2010292898, US2010134262, US2009249271, US2009150021, US2009143937, US2009088939, US2009055047, US2009024269, US2008262677, US2008215210, US2008059034, US10442382, US10406884, US10328916, US10272959, US10124802, US10124709, US10005335, RU2702877, KR20120117741, KR101710743, EP2616256, EP2616256, CN105939906, CN105339226, CN105339226,

**Abstract:**  
A control system (10) for a vehicle (16) includes a sensor (35 - 47) that generates a sensor signal and a stability control system (26). Tire monitoring sensors (20) in each wheel generate tire signals including temperature, pressure and acceleration. The controller (26) is coupled to the sensors (20, 25 - 47), and generates a first roll condition signal as a function of the sensor signal, and generates a second roll condition signal as a function of the tire signals. The first or second roll condition signals control the rollover control system to mitigate a vehicle rollover event.



**4) Family number: 46565272 (US2010211249A)** © PatBase

**Title:** SYSTEM AND METHOD FOR DETECTING VEHICLE MAINTENANCE REQUIREMENTS

**Priority:** US20090379157 20090213

**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2010211249 AA    | 20100819         | US20090379157      | 20090213         |

**Probable Assignee:** INTHINC TECHNOLOGY SOLUTIONS INC

**Assignee(s):(std):** MCCLELLAN SCOTT

**Assignee(s):** OPUS BANK ; INTHINC INC ; INTHINC TECHNOLOGY SOLUTIONS INC

**Inventor(s):(std):** MCCLELLAN SCOTT

**Agent(s):** STEPTOE AND JOHNSON LLP

**International class (IPC 8-9):** G06F7/00 (Advanced/Invention)

**CPC:** G07C5/006 G07C5/085

**European class:** G07C5/00M G07C5/08R2

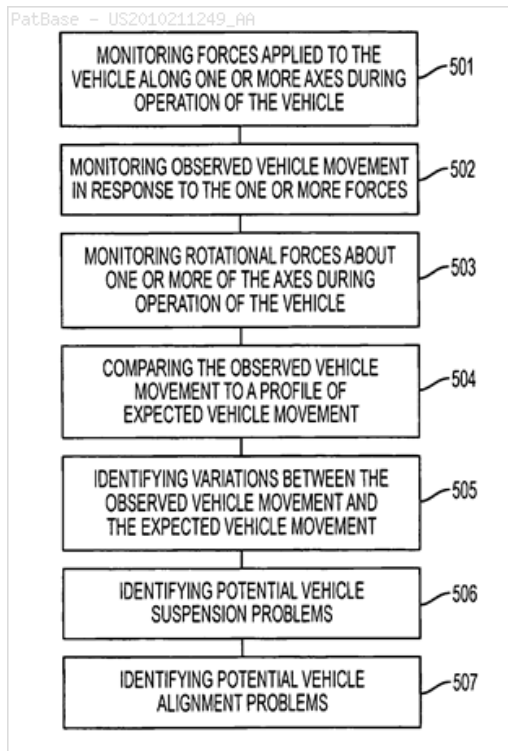
**US class:** 701/29 701/29P 701/31.4 701/31.400P

[Classification Explorer](#)

**Cited documents:** US7826948 BB, US7668645 BB, US7109856 BB, US6278361 BA, US6097999 A, US2011098882 AA, US2010017066 AA, US2008319609 AA, US2008284575 AA, US2007067080 AA, US2007005202 AA,

**Forward Citations:** WO17046262, WO15147581, WO15020831, US9786103, US9726497, US9626811, US9576406, US9524592, US9513128, US9495814, US9361738, US9360322, US9336244, US9315178, US9285223, US9165413, US9127946, US9037572, US8989950, US8818704, US7912641, US2018317051, US2017292983, US2017004660, US2016319761, US2015371462, US2014018976, US2012209470, US2012143489, US2010010723, US2007294033, US10417837, US10351145, US10345351, US10319159, US10309785, US10304138, US10295006, US10227064, US10223845, US10032320, US10019762, EP2948744, CN108025719,

**Abstract:**  
System and method for monitoring the operation of a vehicle. A preferred embodiment comprises monitoring forces applied to the vehicle along one or more axes during operation of the vehicle, monitoring observed vehicle movement in response to the one or more forces, comparing the observed vehicle movement to a profile of expected vehicle movement, and identifying variations between the observed vehicle movement and the expected vehicle movement.

**5) Family number: 41578280** (US2008059021A)

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**Title:** INTEGRATED CONTROL SYSTEM FOR STABILITY CONTROL OF YAW, ROLL AND LATERAL MOTION OF A DRIVING VEHICLE USING AN INTEGRATED SENSING SYSTEM TO DETERMINE LONGITUDINAL VELOCITY

**Priority:** US20060468598 20060830

| Family: | Publication number | Publication date | Application number | Application date |
|---------|--------------------|------------------|--------------------|------------------|
|         | US2008059021 AA    | 20080306         | US20060468598      | 20060830         |
|         | US8712639 BB       | 20140429         | US20060468598      | 20060830         |

**Probable Assignee:** FORD GLOBAL TECHNOLOGIES LLC

**Assignee(s):** FORD GLOBAL TECH ; FORD GLOBAL TECH LLC ; LU JIANBO ; MEYERS JOSEPH C

**Assignee(s):** FORD GLOBAL TECHNOLOGIES ; FORD GLOBAL TECHNOLOGIES LLC ; FORD MOTOR CO

**Inventor(s):** MEYERS JOSEPH ; LU JIANBO ; MEYERS JOSEPH C

**Agent(s):** DICKINSON WRIGHT PLLC; ANGELA M; RAYMOND

**International class**  
(IPC 8-9): B60G17/0195 G06F7/00 (Advanced/Invention);  
B60W10/22 B60W40/10 (Advanced/Non-invention);  
G06F7/00 (Core/Invention)

**CPC:** B60G17/0195 B60G2400/0521 B60G2400/0522 B60G2400/0523 B60G2400/104 B60G2400/106  
B60G2400/204 B60G2400/208 B60G2400/252 B60G2400/41 B60G2400/44 B60G2600/1873  
B60G2800/012 B60G2800/014 B60G2800/016 B60G2800/0192 B60G2800/0194 B60G2800/21  
B60G2800/212 B60G2800/702 B60G2800/912 B60G2800/92 B60G2800/925 B60G2800/95 B60G2800/97  
B60W10/06 B60W10/184 B60W10/22 B60W40/101 B60W2030/041 B60W2030/043

**European class:** B60G17/0195 L60G400/0521 L60G400/0522 L60G400/0523 L60G400/104 L60G400/106 L60G400/204  
L60G400/208 L60G400/252 L60G400/41 L60G400/44 L60G600/1873 L60G800/012 L60G800/014  
L60G800/016 L60G800/0192 L60G800/0194 L60G800/21 L60G800/212 L60G800/702 L60G800/912  
L60G800/920 L60G800/925 L60G800/950 L60G800/970 L60W10/06 L60W10/184 L60W10/22  
L60W30/04B L60W30/04D L60W40/101

**US class:** 701/36 701/36P 701/38 701/48 701/91

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**Cited documents:** US7057503 BB, US6915193 BB, US6782315 BB, US6089680 A, US2007156316 AA, US2005182548 AA, US2005080543 AA, US2004172183 AA, US2004162654 AA, US2004064236 AA, US2003236604 AA, US2003182041 AA, US2003130778 AA,

**Forward Citations:** US9764734, US9662954, US9623877, US9616900, US9573591, US9555783, US9463678, US9403415, US9311761, US9278693, US9245395, US9205717, US9026297, US9020659, US8855866, US8849474, US8655558, US8457832, US8392072, US8344867, US8340860, US8050838, US8019511, US7908112, US7885750, US7844383, US2016272198, US2016068166, US2016068165, US2015039184, US2014358329, US2013338849, US2013238277, US2013131928, US2012259479, US2012245782, US2011087398, US2011006890, US2010250056, US2010198448, US2010131229, US2010131144, US2010131141, US2009319186, US2009292424, US2009177346, US2008140291, US2008059034, US2007173997, US10435028, US10406884, US10392007, US10124709, US10058031, US10005335, CN103465905,

**Abstract:**

A method of controlling a vehicle includes determining an acceleration-based longitudinal velocity, determining a wheel speed-based longitudinal velocity from a plurality of wheel speed sensors, combining the acceleration-based longitudinal velocity and the wheel speed-based longitudinal velocity to obtain a final longitudinal velocity and controlling vehicle with the final longitudinal velocity.



|              |          |               |          |
|--------------|----------|---------------|----------|
| US6356188 BA | 20020312 | US20000669513 | 20000925 |
| US6593849 BB | 20030715 | US20020038364 | 20020104 |
| US6904350 BB | 20050607 | US20030609447 | 20030627 |
| US6941205 BB | 20050906 | US20030620881 | 20030716 |
| US7003389 BB | 20060221 | US20030610279 | 20030630 |
| US7079928 BB | 20060718 | US20040776774 | 20040211 |
| US7085639 BB | 20060801 | US20030610280 | 20030630 |
| US7109856 BB | 20060919 | US20030608909 | 20030627 |
| US7110870 BB | 20060919 | US20030745349 | 20031222 |
| US7132937 BB | 20061107 | US20030609448 | 20030627 |
| US7194351 BB | 20070320 | US20030610278 | 20030630 |
| US7233236 BB | 20070619 | US20030608908 | 20030627 |
| US7302331 BB | 20071127 | US20030604398 | 20030717 |
| US7323976 BB | 20080129 | US20060461007 | 20060731 |
| US7602279 BB | 20091013 | US20080020544 | 20080127 |
| US7653471 BB | 20100126 | US20040787728 | 20040226 |
| US7688191 BB | 20100330 | US20080020548 | 20080127 |
| US7881850 BB | 20110201 | US20080020549 | 20080127 |
| US9162656 BB | 20151020 | US20090631801 | 20091204 |
| USRE40268 E  | 20080429 | US20040019148 | 20041221 |

**Probable Assignee:** FORD MOTOR CO

**Assignee(s):(std):** BREWER MICHAEL E ; BREWER MICHAEL EDWARD ; BROWN TODD A ; FORD GLOBAL TECH INC ; BROWN TODD ALLEN ; FORD GLOBAL TECH LLC ; FORD GLOBAL TECHNOLOGIES LLC ; LU JIANBO ; FORD MOTOR CO ; MATTSOON KEITH GLENN ; FORD GLOBAL TECH ; MEYERS JOSEPH C ; MEYERS JOSEPH CARR

**Assignee(s):** BANAS RICHARD A ; FORD GLOBAL TECHNOLOGIES LLC N D GES D STAATES DELAWARE ; FORD GLOBAL TECHNOLOGIES LLC DEARBORN ; SALIB ALBERT CNEOUDA ; XU LI ; TSENG HONGTEI ERIC ; SAMUEL STEPHEN VARGHESE ; TSENG HONGTEI ERIO ; FORD MOTOR CORP ; DOBROWOLSKI STEVEN F ; FORD GLOBAL TECHNOLOGIES ; FORD GLOBAL TECHNOLOGIES INC A CORP OF MICHIGAN ; KENNEDY JANINE ; FORD GLOBAL TECHNOLOGIES INC A MICHIGAN CORP ; FORD MOTOR CO A CORP OF DELAWARE ; HROVAT DAVORIN DAVID ; FORD GLOBAL TECHNOLOGIES INC ; FORD GLOBAL TECHNOLOGIES LLCDEARBORN MICHIGAN ; FORD GLOBAL TECHNOLOGIES LLC ONE PARKLANE BLVD ; FORD MOTOR COMPANY ; CHUBB ERIK CHRISTOPHER ; BROWN TODD ALLEN ; CHUBB ERIK C ; FORD GLOBAL TECHNOL INC

**Inventor(s):(std):** SAMUEL STEPHEN VARGHESE ; HROVAT DAVORIN DAVID ; TSENG HONGTEI ERIC ; XU LI ; CHUBB ERIK CHRISTOPHER ; BREWER MICHAEL EDWARD ; TSENG HONGTEI ERIO ; LU JIANBO ; MEYERS JOSEPH CARR ; MATTSOON KEITH GLENN ; BROWN TODD ALLEN ; DOBROWOLSKI STEVEN F ; BANAS RICHARD A ; KENNEDY JANINE ; SALIB ALBERT CHENOUDA ; MEYERS JOSEPH C ; BREWER MICHAEL E ; BROWN TODD A ; SALIB ALBERT CNEOUDA ; CHUBB ERIK C ; BROWN TODD ALLEN

**Inventor(s):** TODD ALLEN BROWN ; JOSEPH CARR MEYERS ; BROWN TODD ALLEN DEARBORN ; MEYERS JOSEPH CARR FARMINGTON HILLS ; BREWER MICHAEL EDWARD ROYAL OAK ; LU JIANBO LIVONIA ; BROWN TODD ALLEN DEARBORN ; BROWN TODD ; MEYERS JOSEPH ; BREWER MICHAEL

**Agent(s):** PATENTANWALTSSKANZLEI MEYER ; CARPMAELS AND RANSFORD ; MESSULAM ALEC MOSES ; JACKSON RICHARD ERIC ET AL ; ARTZ AND ARTZ PC ; DICKINSON WRIGHT PLLC ; ANGELA M BRUNETTI PLLC ; OBRIEN JONES PLLC W FORD MOTOR CO ; FORD GLOBAL TECHNOLOGIES LLC ; SMITH GARY ; GARY ; FREDRICK ; GARY A ; FREDERICK V ; RAYMOND L ; OWENS FRED ; FRED ; ANGELA M ; OBRIEN JONES PLLC ; JONES ROBB PLLC ; OWENS ESQ FRED

**Designated states:** AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

**International class (IPC 8-9):** B60C23/00 B60G17/01 B60G17/015 B60G17/016 B60G17/018 B60G17/0185 B60G17/0195 B60G23/00 B60K28/14 B60Q1/00 B60R16/02 B60R16/023 B60R21/01 B60R21/013 B60R21/0132 B60R21/13 B60T17/22 B60T8/00 B60T8/172 B60T8/175 B60T8/1755 B60T8/1769 B60T8/24 B60T8/32 B60T8/66 B60T8/72 B60T8/84 B60T8/88 B60W10/04 B60W10/18 B60W10/20 B60W10/22 B60W30/00 B60W30/04 B60W40/12 B62D37/00 B62D6/00 C12Q1/68 G01C19/00 G01C9/10 G06F19/00 (Advanced/Invention); B60B39/00 B60R21/00 B60R21/013 B60R21/0132 B60W30/04 B62D137/00 G06F17/00 (Advanced/Non-invention); B60G17/015 B60Q1/00 B60R16/02 B60R16/023 B60R21/01 B60R21/013 B60R21/0132 B60T17/18 B60T8/00 B60T8/17 B60T8/24 B60T8/32 B60T8/60 B60T8/72 B60T8/88 B62D6/00 C12Q1/68 G01C9/00 G06F19/00 (Core/Invention); B60B39/00 B60R21/00 B60R21/013 B60R21/0132 B60W30/04 G06F17/00 (Core/Non-invention)

**International class (IPC 1-7):** B60C23/00 B60G17/015 B60G23/00 B60K1/00 B60K28/14 B60Q1/00 B60R16/02 B60R21/00 B60R21/01 B60R21/13 B60R21/32 B60T8/00 B60T8/24 B60T8/58 B62D1/24 B62D137/00 B62D37/00 B62D6/00 C12Q1/68 G01C19/00 G01M17/00 G06F17/00 G06F19/00 G06F7/00 G06G7/48

**CPC:** B60W30/045 B60W40/103 B60W40/12 B60W2040/1307 B60W2520/14 B60W2520/16 B60W2520/18 B60W2520/26 C12Q1/6883 C12Q1/6827 C12Q2600/156 B60T8/176 B60T8/1769 B60T8/17554 B60G2800/925 B60G17/0182 B60G17/0185 B60G2600/08 B60G2600/1871 B60G2800/80 B60T8/17551 B60G17/0162 B60G17/0195 B60G2300/026 B60G2400/0521 B60G2400/0523 B60G2400/104 B60G2400/106 B60G2400/204 B60G2400/208 B60G2400/32 B60G2400/41 B60G2400/4122 B60G2400/61 B60G2401/12 B60G2401/174 B60G2401/28 B60G2800/012 B60G2800/0124 B60G2800/0194 B60G2800/215 B60G2800/24 B60G2800/70 B60G2800/702 B60G2800/85 B60G2800/91 B60G2800/9122 B60G2800/9124 B60G2800/92 B60G2800/922 B60G2800/952 B60G2800/96 B60G2800/962 B60R16/0233 B60R21/01 B60R21/013 B60R21/0132 B60R2021/0018 B60R2021/01122 B60R2021/01313 B60R2021/01322 B60R2021/01327 B60T8/00 B60T8/172 B60T8/175 B60T8/1755 B60T8/241 B60T8/243 B60T8/246 B60T8/885 B60T17/22 B60T2210/22 B60T2230/03 B60T2240/06 B60T2270/413 B60W30/04 B62D6/002

**European class:** B60G17/015A2 B60G17/015G B60G17/016F B60G17/0185 B60G17/018C B60G17/0195 B60R16/023D3F B60R16/02B6A1 B60R21/01 B60R21/013 B60R21/0132 B60R21/01C B60R21/01C3 B60T17/22 B60T8/00 B60T8/00B10H B60T8/00B12 B60T8/00B4 B60T8/172 B60T8/175 B60T8/1755 B60T8/1755B B60T8/1755F B60T8/1769 B60T8/24B B60T8/24B2 B60T8/24F B60T8/88B B60W30/045 B60W40/103 B60W40/12 B62D6/00D C12Q1/68B6 C12Q1/68M6 L60G300/026 L60G400/0521 L60G400/0523 L60G400/104 L60G400/106 L60G400/204 L60G400/208 L60G400/32 L60G400/41 L60G400/4122 L60G400/61 L60G401/12 L60G401/174 L60G401/28 L60G600/08 L60G600/1871 L60G800/012 L60G800/0124 L60G800/0194 L60G800/215 L60G800/24 L60G800/70 L60G800/702 L60G800/80 L60G800/85 L60G800/910 L60G800/9122 L60G800/9124 L60G800/920 L60G800/922 L60G800/925 L60G800/952 L60G800/960 L60G800/962 L60R21/00A8 L60R21/0132T L60R21/0132W L60R21/013P L60R21/01N L60T210/22 L60T230/03 L60T240/06 L60T270/413 L60W30/04 L60W40/13B L60W40/44A L60W520/14 L60W520/16 L60W520/18 L60W520/26 L60W900/50J

**US class:** 1/1 180/167 180/167S 180/172 180/197 180/282 180/282S 280/5.502 280/5.502S 280/735 280/735S 280/755 303/138 303/146 303/158 303/163 303/174 340/429 340/438 340/439 340/44 340/440 340/440P 340/440S 340/441 340/444 340/446 340/446P 340/465 340/467 435/6 435/6.12 435/6.120P 435/6P 701/1 701/124 701/124P 701/29.2 701/29.200P 701/30.3 701/31.2 701/33.9 701/34 701/34P

701/36 701/36P 701/36S 701/38 701/38P 701/38S 701/40 701/41 701/42 701/45 701/45S 701/46  
701/48 701/69 701/7 701/70 701/70P 701/70S 701/71 701/71P 701/72 701/72S 701/74 701/75 701/79  
701/8 701/80 701/80S 701/83 701/90 701/91 702/41 702/41P

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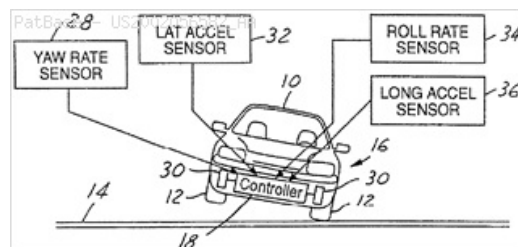
**Forward Citations:**

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AU2014243067, AU2009319891,

# Abstract:

A system and method for detecting wheel lift of an automotive vehicle includes a yaw rate sensor (28) that generates a yaw rate signal, a lateral acceleration sensor (32) that generates a lateral acceleration signal, a roll rate sensor (34) generating a roll rate signal, and a longitudinal acceleration sensor (36) for generating a longitudinal acceleration signal. A controller (18) is coupled to the yaw rate sensor (28), the lateral acceleration sensor (32), the roll rate sensor (34), and the longitudinal acceleration sensor (36). The controller determines a dynamic load transfer acting on the plurality of wheels as a function of yaw rate, lateral acceleration roll rate, and longitudinal acceleration. Normal forces for each of the plurality of wheels is determined as a function of the dynamic load transfer. Wheel lift is indicated when at least one of the normal forces for each of the plurality of wheels is less than a normal force threshold.



## 7) Family number: 12430508 (US4843554A)

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**Title:** Airplane takeoff and landing performance monitoring system  
**Priority:** US19870082766 19870806 US19880192562 19880511 US19910755248 19910905  
US19930045337 19930406 US19940281799 19940721

| Family: | Publication number | Publication date | Application number | Application date |
|---------|--------------------|------------------|--------------------|------------------|
|         | US4843554 A        | 19890627         | US19870082766      | 19870806         |
|         | US5047942 A        | 19910910         | US19880192562      | 19880511         |
|         | US5353022 A        | 19941004         | US19930045337      | 19930406         |
|         | US5499025 A        | 19960312         | US19940281799      | 19940721         |

**Probable Assignee:** US ARMY

**Assignee(s):(std):** NASA ; US ARMY

**Assignee(s):** UNITED STATES OF AMERICA REPRESENTED BY ADMINISTRAT ; OF KANSAS CRNTER FOR RESEARCH INC UNIV ; UNITED STATES OF AMERICA AS REPRESENTED BY ADMINIST ; THE UNITED STATES OF AMERICA AS REPRESENTED BY THE ; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GOVE ; THE UNITED STATES OF AMERICA AS REPRESENTED BY THE UNITED STATES NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ; THE UNITED STATES OF AMERICA AS REPRESENTED BY THE ADMINISTRATOR OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ; ADMINISTRATOR OF NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AS US GOV ; GOVERNMENT OF UNITED STATES AS REPRESENTED BY ADMI ; GOVERNMENT OF UNITED STATES REPRESENTED BY ADMIN I

**Inventor(s):(std):** MIDDLETON DAVID B ; PERSON JR LEE H ; PERSON LEE H ; SRIVATSAN RAGHAVACHARI

**International class (IPC 8-9):** G05D1/00 (Advanced/Invention)

**International class (IPC 1-7):** G06F15/50 G06F16/48 G06G7/70 G08B21/00

**CPC:** G05D1/0083 G08G5/0021 G08G5/0065 G08G5/025

**European class:** G05D1/00E

**US class:** 340/959 364/427 364/428 701/15 701/16 73/178T

[Classification Explorer](#)

**Cited documents:** US5353022 A, US5103224 A, US5047942 A, US4980833 A, US4843554 A, US4837695 A, US4773015 A, US4638437 A, US4454582 A, US4319218 A, US4251868 A, US4147056 A, US4122522 A, US4104612 A, US4042197 A, US3865071 A, US3691356 A, US3504335 A, US3382351 A, US3128445 A, US3111577 A, EP0166487 A2,

**Forward Citations:** WO9847056, WO9508144, WO9401042, WO19171182, WO16191320, WO14138441, WO13091057, WO07006310, WO07006310, WO06017095, WO06017095, WO02097764, WO02097764, WO0062016, US9862499, US9791562, US9738400, US9690379, US9663223, US9573698, US9529010, US9465097, US9399524, US9260183, US9196166, US9164505, US9162656, US9082301, US9073633, US9058742, US9014881, US9008871, US8977413, US8954254, US8855886, US8838358, US8774986, US8682561, US8638308, US8630782, US8630752, US8600586, US8594903, US8538655, US8504223, US8494691, US8441376, US8412434, US8386167, US8380372, US8368641, US8364329, US8359542, US8355850, US8346455, US8344936, US8331888, US8249792, US8244444, US8224506, US8185301, US8184094, US8180562, US8135501, US8121771, US8121745, US8082070, US8050840, US8032267, US8007282, US8005582, US7987036, US7986249, US7970502, US7945354, US7916042, US7885734, US7885733, US7869943, US7844372, US7812820, US7797095, US7783393, US7756637, US7755602, US7751948, US7751947, US7742036, US7737965, US7679529, US7662113, US7653471, US7580235, US7577501, US7555372, US7554483, US7487029, US7460029, US7418319, US7404716, US7398182, US7364121, US7363119, US7321318, US7307619, US7274308, US7256710, US7215326, US7209028, US7203577, US7188007, US7177731, US7158052, US7148814, US7148814, US7142131, US7139645, US7139645, US7089090, US7014146, US6866643, US6720891, US6614397, US6546317, US6527225, US6449573, US6445363, US6390417, US6304194, US6253126, US6175315, US6162190, US6133857, US6121899, US6107943, US6002972, US5968106, US5940013, US5913912, US5893040, US5796612, US5745863, US5737222, US5668541, US5606505, US5523949, US5499025, US5457630, US5420582, US5406487, US5353022, US5343395, US5103224, US5050081, US5047942, US2017088284, US2016187184, US2014368359, US2014225753, US2014106333, US2013261855, US2013238173, US2013211636, US2011224848, US2011184592, US2011144875, US2011125347, US2011118909, US2011077833, US2011010036, US2010299040, US2010299039, US2010299038, US2010262358, US2010262319, US2010198432, US2010145574, US2010127895, US2010125403, US2010121504, US2010100262, US2010094488, US2010079329, US2010076627, US2010030408, US2009293012, US2009229272, US2009125168, US2009062972, US2008316058, US2008249674, US2008215198, US2008167764, US2008154442, US2008150785, US2008136677, US2008012729, US2007288130, US2007281645, US2007271019, US2007250224, US2007164877, US2007126602, US2007115140, US2006243857, US2006214063, US2006129070, US2006012884, US2006010972, US2006005147, US2006004496, US2005288895, US2005261820, US2005261813, US2005228674, US2005222721, US2005203676, US2005203675, US2005192717, US2005178903, US2005143871, US2005057440, US2005006524, US2004260434, US2004214630, US2004167701, US2004167685, US2004059474, US2004054449, US2004004557, US2003193410, US2003176954, US10429856, US10315778, US10315777, US10227140, US10214300, US10202204, US10196154, US10082420, TWI503738, NL2001846, JP6179974, JP5001034, JP3981183, JP2014051272, JP2013184700, JP2007246079, JP10059296, GB2511425, GB2511425, GB2375748, GB2375748, FR3008486, FR2903801, FR2898332, FR2842337, FR2826469, EP3012590, EP3007948, EP3007948, EP2795416, EP2568257, EP2568257, EP2568257, EP2328054, EP1834875, EP1808737, EP1616788, EP1616788, EP1547059, EP1547059, EP1547059, EP1403751, EP1273986, EP0807897, EP0807897, CN104471502, CN103455296,

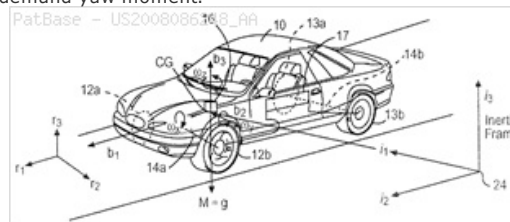
**Abstract:**  
The invention is a real-time takeoff and landing performance monitoring system which provides the pilot with graphic and metric information to assist in decisions related to achieving rotation speed (VR) within the safe zone of the runway or stopping the aircraft on the runway after landing or take off - abort. The system processes information in two segments: a pretakeoff segment and a real-time segment. One-time inputs of ambient conditions and airplane configuration information are used in the pretakeoff segment to generate scheduled performance data. The real-time segment uses the scheduled performance data, runway length data and transducer measured parameters to monitor the performance of the airplane throughout the takeoff roll. A novel and important feature of this segment is that it updates the estimated runway rolling friction coefficient. Airplane performance predictions also reflect changes in headwind occurring as the takeoff roll progresses. The system displays the position of the airplane on the runway, indicating runway used and runway available, summarizes the critical information into a situation advisory flag, flags engine failures and off-nominal acceleration performance, and indicates where on the runway particular events such as decision speed (V1), rotation speed (VR) and expected stop points will occur based on actual or predicted performance. The display also indicates airspeed, wind vector, engine pressure ratios, second segment climb speed, and balanced field length (BFL). The system detects performance deficiencies by comparing the airplane's present performance with a predicted nominal performance based upon the given conditions.



US10005335, US10000215, KR101872984, JP6037301, JP2013226975, GB2531327, GB2531327, GB2517995, GB2517995, DE102011114703, CN107635846, CN107430043, CN105555627, CN105339226, CN105339226, CN103359114, CN103359114, CN102632924, CN102632924, CN102416951, CN102131662,

#### Abstract:

An integrated stability control system using the signals from an integrated sensing system for an automotive vehicle includes a plurality of sensors sensing the dynamic conditions of the vehicle. The sensors include an IMU sensor cluster, a steering angle sensor, wheel speed sensors, any other sensors required by subsystem controls. The signals used in the integrated stability controls include the sensor signals; the roll and pitch attitudes of the vehicle body with respect to the average road surface; the road surface  $\mu$  estimation; the desired sideslip angle and desired yaw rate from a four-wheel reference vehicle model; the actual vehicle body sideslip angle projected on the moving road plane; and the global attitudes. The demand yaw moment used to counteract the undesired vehicle lateral motions (under-steer or over-steer or excessive side sliding motion) are computed from the above-mentioned variables. The braking control is a slip control whose target slip ratios at selective wheels or wheel are directly generated from the request brake pressures computed from the demand yaw moment.



#### 9) Family number: 66712844 (US2017240169A)

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**Title:** MOBILITY DEVICE CONTROL SYSTEM

**Priority:** US20160298721P 20160223 US20160322522P 20160414 US20160339723P 20160520  
US20160403030P 20160930 US20170441190 20170223 WO2017US19214 20170223  
US20170486980 20170413 WO2017US27410 20170413 US20170600703 20170520  
US20170509061P 20170520 WO2017US33705 20170520 US20170532993P 20170715  
US20170559263P 20170915 US20170787613 20171018 US20170581670P 20171104  
US20180982737 20180517 US20180035205 20180713 US20180035041 20180713  
US20180200088 20181126

| Family: | Publication number | Publication date | Application number | Application date |
|---------|--------------------|------------------|--------------------|------------------|
|         | AU2017223823 AA    | 20180913         | AU20170223823      | 20170223         |
|         | AU2017250598 AA    | 20181129         | AU20170250598      | 20170413         |
|         | AU2017268465 AA    | 20181206         | AU20170268465      | 20170520         |
|         | CA3015608 AA       | 20180823         | CA20173015608      | 20170223         |
|         | CA3024145 AA       | 20181113         | CA20173024145      | 20170413         |
|         | CA3025067 AA       | 20181120         | CA20173025067      | 20170520         |
|         | EP3420417 A1       | 20190102         | EP20170713499      | 20170223         |
|         | EP3443426 A2       | 20190220         | EP20170734520      | 20170413         |
|         | EP3458007 A1       | 20190327         | EP20170730984      | 20170520         |
|         | IL261359 A0        | 20181031         | IL20170261359      | 20170223         |
|         | IL262327 A0        | 20181129         | IL20170262327      | 20170413         |
|         | JP2019521720 T2    | 20190808         | JP20180553966T     | 20170413         |
|         | JP2019523662 T2    | 20190829         | JP20180560886T     | 20170520         |
|         | MX2018010241 A1    | 20190606         | MX20180010241      | 20170223         |
|         | MX2018012565 A1    | 20190708         | MX20180012565      | 20170413         |
|         | US2017240169 AA    | 20170824         | US20170441190      | 20170223         |
|         | US2017259811 AA    | 20170914         | US20170600703      | 20170520         |
|         | US2017300058 AA    | 20171019         | US20170486980      | 20170413         |
|         | US2018056985 AA    | 20180301         | US20170787613      | 20171018         |
|         | US2018375839 AA    | 20181227         | US20180982737      | 20180517         |
|         | US2019046373 AA    | 20190214         | US20180035205      | 20180713         |
|         | US2019083336 AA    | 20190321         | US20180035041      | 20180713         |
|         | US2019092322 AA    | 20190328         | US20180200088      | 20181126         |
|         | US10220843 BB      | 20190305         | US20170441190      | 20170223         |
|         | WO17147347 A1      | 20170831         | WO2017US19214      | 20170223         |
|         | WO17180868 A2      | 20171019         | WO2017US27410      | 20170413         |
|         | WO17180868 A3      | 20171228         | WO2017US27410      | 20170413         |
|         | WO17201513 A1      | 20171123         | WO2017US33705      | 20170520         |
|         | WO19018235 A1      | 20190124         | WO2018US42114      | 20180713         |

**Probable Assignee:** DEKA PRODUCTS PARTNERSHIP LTD

**Assignee(s):(std):** ADAMS RYAN J ; BHAT PRASHANT ; COLLINS DAVID E ; CONWAY TREVOR A ; DEKA PRODUCTS LP ; COULTER STEWART M ; DASTOUS SUSAN D ; COUTURE DAVID J ; CURTIN PAUL R ; CRANFIELD ZACHARY E ; DATTOLO JAMES J ; GRAY BRIAN G ; MERWE DIRK A VAN D ; KAMEN DEAN ; KANE DEREK G ; KINBERGER MATTHEW B ; LEPINE ALLISON E ; DELAURENTIS KATIE A ; FLYNN CATHARINE N ; DOYON THOMAS A ; MCGRATH DALE B ; DOHNERTY DAVID B ; MEEHAN DAVID J ; MARCHANT JR GEORGE W ; MARRION JEFFREY C ; PAWLOWSKI DANIEL F ; PERET BOB D ; NORRIS MATTHEW A ; STREETER ALEXANDER D ; MYERS MATTHEW J ; PITENIS CONSTANCE D ; SABIN ERIK N ; ROUSSEAU ELIZABETH ; ZIRN TANIA M F ; SCHMIDT III ATLANTA G ; MEUSE STEVEN B

**Assignee(s):** DOHERTY DAVID B ; DEKA PRODUCTS PARTNERSHIP LTD ; CONWAY TREVOR A

**Inventor(s):(std):** PAWLOWSKI DANIEL F ; DASTOUS SUSAN D ; GRAY BRIAN G ; COULTER STEWART M ; MERWE DIRK A VAN D ; ADAMS RYAN J ; FLYNN CATHARINE N ; MYERS MATTHEW J ; MCGRATH DALE B ; LEPINE ALLISON E ; COLLINS DAVID E ; DOYON THOMAS A ; KANE DEREK G ; STREETER ALEXANDER D ; COUTURE DAVID J ; CONWAY TREVOR A ; BHAT PRASHANT ; KAMEN DEAN ; ROUSSEAU ELIZABETH ; KINBERGER MATTHEW B ; SABIN ERIK N ; DOHERTY DAVID B ; PERET BOB D ; DELAURENTIS KATIE A ; NORRIS MATTHEW A ; PITENIS CONSTANCE D ; ZIRN TANIA M F ; MEEHAN DAVID J ; COUTURE DAVID ; PERET BOB ; MYERS MATTHEW ; KANE DEREK ; GRAY BRIAN ; PAWLOSKI DANIEL ; MERWE DIRK VAN D ; DOHERTY DAVID ; STREETER ALEXANDER ; NORRIS MATTHEW ; COULTER STEWART ; DASTOUS SUSAN ; DOHNERTY DAVID B ; CONWAY TREVOR A ; CURTIN PAUL R ; CRANFIELD ZACHARY

E ; DATTOLO JAMES J ; SCHMIDT III ATLANTA G ; MEUSE STEVEN B ; MARCHANT JR GEORGE W ; MARRION JEFFREY C ; NORRIS JR MATTHEW A ; SCHMIDT III ATLANT G ; DIRK A VAN D MERWE ; STEWART M COULTER ; BRIAN G GRAY ; SUSAN D DASTOUS ; DANIEL F PAWLOWSKI ; DEAN KAMEN ; BOB D PERET ; DEREK G KANE

**Inventor(s):** PAWLOSKI DANIEL F

**Agent(s):** GRIFFITH HACK; GOWLING WLG CANADA LLP; ELKINGTON AND FIFE LLP; HASELTINE LAKE LLP; CHAPMAN KATHLEEN; CHAPMAN KATHLEEN ET AL

**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA US UZ VC VN ZW ZM ZW

**International class (IPC 8-9):** A61G3/08 A61G5/04 A61G5/06 A61G5/10 A61G5/1051 A61G5/14 A61H3/04 B60L11/18 B60L15/10 B60L15/20 B60L7/28 B60T7/10 B60W B60W10/08 B60W10/184 B60W10/20 B60W30/02 B60W30/04 B60W30/09 B60W30/14 B60W50/10 B60W50/12 B62D57/02 B62K5/003 G01M1/12 G01P15/02 G01P15/08 G01P15/16 G05B13/04 G05D G05D1/00 G05D1/02 G06F21/60 G08G1/16 G16H40/67 G16H80/00 H04L29/06 H04L9/08 H04L9/32 H04Q9/00 (Advanced/Invention); G01P15/02 G01S19/01 (Advanced/Non-invention); B60W G05D (Subclass/Invention)

**CPC:** B60T7/102 B60L2220/16 B60L2240/16 G01M1/122 B60W30/04 B60W30/146 B60W2520/14 B60W2520/28 B60W2720/30 B60L2210/30 B60L2240/42 B60L2240/463 B60L2240/54 B60L7/26 B62K11/007 B60K1/04 B60K7/0007 B60Y2200/84 B60L15/025 B60L7/28 B60L2240/12 Y02T10/643 Y02T10/642 Y02T10/7005 Y02T10/7061 Y02T10/7241 B62K5/007 B60L50/52 B60L50/66 B60L58/21 A61G5/1091 A61G5/1056 A61G5/125 B60K17/043 B60K17/356 B60K2007/0046 B60K2007/0092 A61G5/122 A61G5/10 A61G5/14 A61G5/041 B60L15/2045 B60L2200/34 B60L2240/423 B60L2240/461 B60L2250/24 B62K5/003 B60L50/50 G01P15/02 G05B13/048 G05D1/0077 G05D2201/0206 Y02T10/645 Y02T10/72 Y02T10/7283 A61G5/04 B60L15/20 B60W10/08 B60W10/184 B60W10/20 B60W30/02 B60W30/09 B60W30/143 B60W50/10 B60W2300/38 B60W2420/42 B60W2420/52 B60W2520/16 B60W2520/18 B60W2530/10 B60W2550/10 B60W2710/083 B60W2720/106 B60W2720/24 B60Y2400/112 G05D1/0238 Y02T10/7258 A61G5/06 A61G5/1059 A61G2203/14 A61G2203/22 A61G2203/30 B60L15/10 G05D1/0246 G05D1/0274 Y02T90/16 A61G3/0808 A61G5/061 A61G5/104 A61G5/1043 A61G5/1051 A61G5/1067 G01S19/01 G05D1/0223 G05D1/0278 A61G5/046 A61G5/063 A61G5/1089 A61G5/128 A61G2203/20 A61G2203/36 A61G2203/42 A61G2203/72 G06F21/31 G16H20/30 H04L9/0841 H04L9/3215 H04L9/3226 H04L9/3239 H04L2209/34 H04L2209/80 H04L2209/84 H04W12/003 H04W12/06 A61G5/047 A61G5/048 A61G5/1078 A61G2203/70 G06F21/305 G16H40/67 H04L9/0656 H04L9/3271 H04L63/0435 H04L63/10 H04L67/025 H04L2209/88 H04W12/001 H04W12/0013 H04W12/02 H04W12/0401 H04W12/08 G06F21/606 G16H80/00 H04L9/0869 H04L9/3236 H04L63/0442 H04W12/04

**US class:** 1/1 180/65.1 701/22 701/41 713/171

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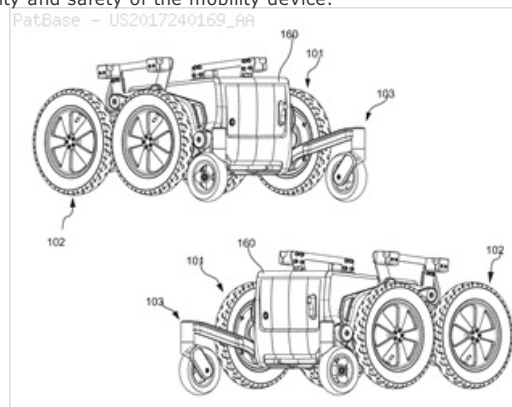
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**Forward Citations:**

USD846452, USD844622, USD830386, USD830385, USD830384, USD829740, USD829612, US2019002045, US10447784, US10384558, US10350479, US10220843, FR3079139,

**Abstract:**

A mobility device that can accommodate speed sensitive steering, adaptive speed control, a wide weight range of users, an abrupt change in weight, traction control, active stabilization that can affect the acceleration range of the mobility device and minimize back falls, and enhanced redundancy that can affect the reliability and safety of the mobility device.



**10) Family number: 26941871 (US6498976B)**

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|                  |                                            |                         |                           |                         |
|------------------|--------------------------------------------|-------------------------|---------------------------|-------------------------|
| <b>Title:</b>    | Vehicle operator advisor system and method |                         |                           |                         |
| <b>Priority:</b> | US20000244386P 20001030                    | US20000244827P 20001031 | US20000704461 20001101    |                         |
| <b>Family:</b>   | <b>Publication number</b>                  | <b>Publication date</b> | <b>Application number</b> | <b>Application date</b> |
|                  | US6498976 BA                               | 20021224                | US20000704461             | 20001101                |

**Probable Assignee:** DAIMLER AG

**Assignee(s):(std):** FREIGHTLINER LLC

**Assignee(s):** DAIMLER AG ; DAIMLER TRUCKS NORTH AMERICA LLC

**Inventor(s):(std):** EHLBECK JAMES M ; KIRN CHRISTOPHER L ; LENZ THOMAS ; MOELLENHOFF JOERG ; ROTERS GERD ; RUHNAU GERHARD

**International class (IPC 8-9):** B60G17/016 B60G17/0195 B60T8/1755 (Advanced/Invention)

**International class (IPC 1-7):** G01D21/00

**CPC:** B60G17/0162 B60G17/0195 B60G2400/204 B60G2400/822 B60G2600/02 B60G2800/012 B60G2800/016 B60G2800/215 B60G2800/224 B60G2800/242 B60G2800/244 B60G2800/70 B60G2800/704 B60G2800/9124 B60T8/17554 B60T2230/03

**European class:** B60G17/015A2 B60G17/015G B60G17/016F B60G17/0195 B60T8/00B10H B60T8/1755F L60G400/204 L60G400/822 L60G600/02 L60G800/012 L60G800/016 L60G800/215 L60G800/224 L60G800/242 L60G800/244 L60G800/70 L60G800/704 L60G800/9124 L60T230/03

**US class:** 701/70 701/71 701/72 701/79

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**Cited documents:** US6278930 BA, US6263268 BA, US6253123 BA, US6185489 BA, US6081761 A, US6065558 A, US5825284 A, US4941365 A,

**Forward Citations:** WO16195557, WO15188916, WO13039911, WO13029703, WO07130216, WO07073772, WO06062774, USRE47162, USRE46645, USRE46613, USRE40496, USRE40268, US9988215, US9969564, US9969370, US9963308, US9932183, US9932181, US9919882, US9914602, US9902576, US9868598, US9862551, US9845210, US9840366, US9834373, US9815620, US9809381, US9805599, US9796319, US9495863, US9290165, US9162656, US9145165, US8886434, US8884759, US8800709, US8798887, US8768594, US8751141, US8744689, US8731977, US8669856, US8442720, US8352143, US8346452, US8346433, US8311706, US8219282, US8134478, US8121758, US8050857, US8019514, US8005596, US8005592, US7925412, US7911361, US7899594, US7877201, US7877200, US7877199, US7877178, US7715965, US7668645, US7660654, US7653471, US7640081, US7600826, US7590481, US7573375, US7480547, US7451032, US7430468, US7308350, US7302331, US7277787, US7246000, US7239949, US7233236, US7209818, US7194351, US7167787, US7136731, US7136730, US7132937, US7130735, US7120528, US7109856, US7096103, US7085642, US7085639, US7079928, US7040722, US7027902, US7003389, US6963797, US6961648, US6954140, US6941205, US6904351, US6904350, US6834218, US6741922, US6728621, US6697726, US2017113607, US2017096127, US2015258996, US2015039175, US2014195310, US2013138288, US2012173133, US2012130612, US2012127180, US2011010048, US2010211283, US2010198445, US2010030474, US2009319129, US2009300035, US2009030574, US2008272899, US2008208416, US2008133101, US2007262883, US2007260384, US2007078581, US2006265108, US2006119174, US2006052929, US2005060082, US2004245853, US2004216020, US2004119335, US2004102894, US2004068358, US2003135323, US10464741, US10399789, US10391986, US10268962, US10239436, US10179703, US10065816, US10059246, US10040460, US10035668, JP2004323009, EP2750942, EP2135783, EP1522473, EP1522473, EP1470978, DE102011111862, CN103129560, CN103129560, AU2013206494, AU2003226233,

**Abstract:**  
An automatic deceleration control apparatus for a vehicle operates so as to secure appropriate tire grip performance, depending on the conditions of a road surface on which the vehicle runs turning, and restrain excessive rolling of the vehicle body, there by stabilizing the turning behavior of the vehicle at all times. While the vehicle is turning on a high-friction road surface without undergoing haw moment control, a safe vehicle speed is computed within the rollover limit of the vehicle. While the vehicle is turning on a low-friction road surface under haw moment control, on the other hand, a safe vehicle speed that ensures satisfactory tire grip performance is computed in accordance with an estimated road friction coefficient. When the vehicle is about to exceed its safe speed as it turns, it is automatically decelerated to the safe speed or below. Thus, the vehicle can be prevented from spinning, drifting out, or rolling over.

