

Estimation Of Vehicle Mass And Road Grade

ESTIMATION OF VEHICLE MASS AND ROAD GRADE

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Mechanical Engineering

by
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August 2008

Accepted by:
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Summary : Free estimation of vehicle mass and road grade pdf download - the vehicle longitudinal dynamics model $f = ma$ forms the core of this model-based approach mathematically this is a single equation with one unknown parameter mass and one time-varying input disturbance grade the goal is to estimate the constant parameter and time-varying grade by using engine torque and speed vehicle speed and transmission state the problem is fundamentally difficult because of i variation of grade over time ii lack of rich data during most of vehicle s cruise time iii uncertainty about available traction force during gear-shift periods and braking and iv low signal-to-noise ratio for vehicle acceleration signal

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recursive least squares with forgetting for online ... - recursive least squares with forgetting for online estimation of ... mass and road grade estimation. ... estimation of the vehicle mass and road grade.

experiments for online estimation of heavy vehicle's mass ... - experiments for online estimation of heavy vehicle ... vehicle mass and road grade. ... provides simultaneous mass and road grade estimation without additional ...

estimation of vehicle mass and road grade - estimation of vehicle mass and road grade a thesis presented to the graduate school of clemson university in partial fulfillment of the requirements for the degree

vehicle mass and road grade estimation using kalman filter - vehicle mass and road grade estimation using kalman filter examensarbete utfört i fordonssystem vid tekniska högskolan i linköping av erikjonssonholm

development of estimation algorithms for vehicle's mass ... - development of estimation algorithms for vehicle's ... development of estimation algorithms for vehicle's mass and road grade 891

road grade and vehicle parameter estimation for ... - road grade and vehicle parameter estimation ... this paper presents a system for estimating the road grade, mass, rolling resistance and aerodynamic drag of a ground

online estimation of road grade and hybrid electric ve ... - estimated vehicle mass and road gradeestimated vehicle mass and road gradeestimated vehicle mass and road grade ... vehicle mass and road grade estimation", ...

road grade estimation for look-ahead vehicle control - road grade estimation for look-ahead vehicle control ... the road grade estimation method by introducing the ve- ... total dynamic vehicle mass is expressed as m_t ...

improved road grade estimation using sensor fusion - improved road grade estimation using sensor fusion ... influence the performance of the vehicle has increased. the mass and the road grade are two parameters that ...

a hybrid algorithm combining ekf and rls in estimation of ... - a hybrid algorithm combining ekf and rls in synchronous estimation of road grade and vehicle' mass for a hybrid electric bus yong suna, liang lib,*, ...

an adaptive observer-based parameter estimation algorithm ... - the vehicle's mass and the road grade are two parameters that largely ... the road gradient and mass estimation provides useful information to a vehicle

vehicle mass estimation using a total least-squares approach* - vehicle mass estimation using a total least ... vehicle mass estimation ... bitious simultaneous estimation of time-varying road grade and constant vehicle mass, ...

adaptive observer-based parameter estimation with ... - edge of road grade proves to be ineffective as the method would contain an unacceptable level of error [1]. ... approach in road gradient and vehicle's mass estimation

parameter estimation and command modification for ... - keywords: parameter estimation, gps, pitch, road grade, command modification, automated ... automation: vehicle mass, road grade, aerodynamic drag, ...

parameter estimation and command modification for ... - parameter estimation and command modification ... parameter estimation and command modification for longitudinal control of heavy ...

vehicle mass, road grade, ...

proceedings, annual meeting of the air & waste management ... - vsp is defined as the instantaneous power per unit mass of the vehicle and can be calculated ... "road grade estimation for on-road vehicle emissions modeling ...

vehicle state estimation using steering torque - vehicle state estimation using steering torque paul yih ... measurements from road grade and bank angle. ... mis the vehicle mass, ...

estimation of the longitudinal and lateral velocities of a ... - estimation of the longitudinal and lateral velocities of a vehicle ... velocities of a vehicle using extended kalman filters ... the vehicle mass and road grade, ...

online estimation of rolling resistance and air drag for ... - online estimation of rolling resistance and ... 2.3.2 road grade and vehicle mass ... 4 parameter estimation 27 4.1 augmented vehicle model ...

institutionen för systemteknik - linköping university - institutionen för systemteknik department of electrical engineering ... simultaneous estimation of vehicle mass and road grade has been performed in[21], ...

estimation of road load parameters via on-road vehicle testing - estimation of road load parameters via on-road vehicle testing ... vehicle road load road grade vertical load on the tire due to sprung & unsprung mass v_x : ...

appending high-resolution elevation data to gps speed ... - distribution of road grade estimation error by adas ... estimation of powertrain loads and vehicle usage ... estimate vehicle mass and road grade ...

estimation of road load parameters via on-road vehicle ... - estimation of road load parameters via on-road vehicle testin g ... vertical load on the tire due to sprung & unsprung mass v : tire ... of road grade ...

ieeetransactions on intelligent transportation systems 1 a ... - ... estimate the vehicle mass, the ... estimate the vehicle mass and road grade. fathy ... have been applied to the estimation with nonlinear vehicle models [5 ...

vehicle system dynamics lateral load transfer and normal ... - lateral load transfer and normal forces estimation for vehicle safety ... the centre of gravity (cog), road grade, ... the vehicle's mass is an important parameter ...

research article vehicle velocity and roll angle ... - estimation of the road grade and bank angles is discussed ... is the sprung mass of the ... force induced by road grade angle and vehicle roll model. with

nonlinear estimation of longitudinal tire slip under ... - nonlinear estimation of longitudinal tire slip under several ... $m a$ +road grade ... by multiplying the vehicle mass by the acceleration at the

integrating inertial sensors with gps for vehicle dynamics ... - integrating inertial sensors with gps for vehicle ... modeling fidelity in the estimation of vehicle ... the influence of road grade, bank angle, and vehicle roll ...

estimation of road inclination and bank angle in ... - estimation of road inclination and bank angle in automotive vehicles ... design for estimation of the vehicle sideslip angle ... mass. for a vehicle traveling ...

integrating ins sensors with gps measurements for ... - for continuous estimation of vehicle sideslip, ... road grade can be estimated by examining the ratio ... m vehicle mass; i

proceedings of the institution of mechanical engineers ... - proceedings of the institution of mechanical ... integrated vehicle mass estimation for vehicle safety control ... it is impossible to classify the road grade

fleet dna (presentation), nrel (national renewable energy ... - national renewable energy laboratory – new data products include road grade and vehicle power specific analyses ... – vehicle mass estimation ...

date of joining: 11/072011 email: tejasghotikarch ... - estimator for estimation of vehicle mass and road grade international journal vehicular technology, ieee / ...

robust bank angle estimation for rolling stability control ... - robust bank angle estimation for rolling stability control on ... by the road. also the road bank angle and road grade are ... bank road vehicle ...

uninterrupted portable car navigation system using gps ... - uninterrupted portable car navigation system ... forces because of unknown road grade. ... identification of the road link where vehicle is most likely travelling ...

modeling road and rail freight energy consumption: a ... - modeling road and rail freight energy consumption: ... freight energy consumption: a comparative study ... to changes in vehicle characteristics such as mass and ...

data needs for a proposed heavy-duty vehicle modal ... - data needs for a proposed heavy-duty vehicle modal emission ... accurate estimation of heavy-duty vehicle emissions is essential ... vehicle mass, and road grade.

determination of cycling speed using a closed-form ... - determination of cycling speed using a closed-form solution from nonlinear dynamic equations ... the estimation of vehicle speed was normally ... mass, and road grade.

a methodology for selection of optimum power rating of ... - electric vehicle along with some specified design ... environment under a sequence of road grade angle ... gravity is determined by the mass of the vehicle and the

command modification for longitudinal control of automated ... - grade road resistance ... – parameter variation: mass of a commercial heavy vehicle can vary up to 500 % ... – parameter estimation !

effect of pavement type on fuel consumption and emissions ... - effect of pavement type on fuel consumption and emissions in city ... 5.1 estimation of fuel consumption and ... same. these included 1) vehicle mass, 2) ...

operating cost, fuel consumption, and emission models in ... - operating cost, fuel consumption, and emission ... vlv average vehicle mass for ... operating cost fuel consumption .]

a statistical model of vehicle emissions and fuel consumption - not flexible enough to account for such factors as road grade, ... a statistical model of vehicle emissions and ... which is the mass of emissions per mass unit of

a statistical model of vehicle emissions and fuel consumption - a statistical model of vehicle emissions and fuel consumption ... such factors as road grade, ... following composite vehicle specification parameters: mass, , ...

class 8 truck freight efficiency improvement project - vehicle controls integration ... •fuel economy estimation ... limits torque based on vehicle mass and road grade to limit excessive

the influence of emission specific characteristics on ... - the influence of emission specific characteristics on vehicle ... the influence of emission specific characteristics on vehicle operation: ... • s = road grade ...

optimization of electric vehicle movement for efficient ... - optimization of electric vehicle movement for efficient energy consumption qin yan, ... (Å road grade force

earthmoving operations contents - globalsecurity - earthmoving operations contents page ... road and ditch construction 4-2 earth- and gravel-road maintenance ...

voc species and emission inventory from vehicles and their ... - voc species and emission inventory from vehicles and their soa ... aerosol (soa) mass yields of gasoline, ... daily vkt and average speeds of various vehicle and road

intelligent diagnostics of operational health of aging ... - operational health of aging transportation ... • road grade and vehicle parameter estimation for ... and their use in determining vehicle mass,