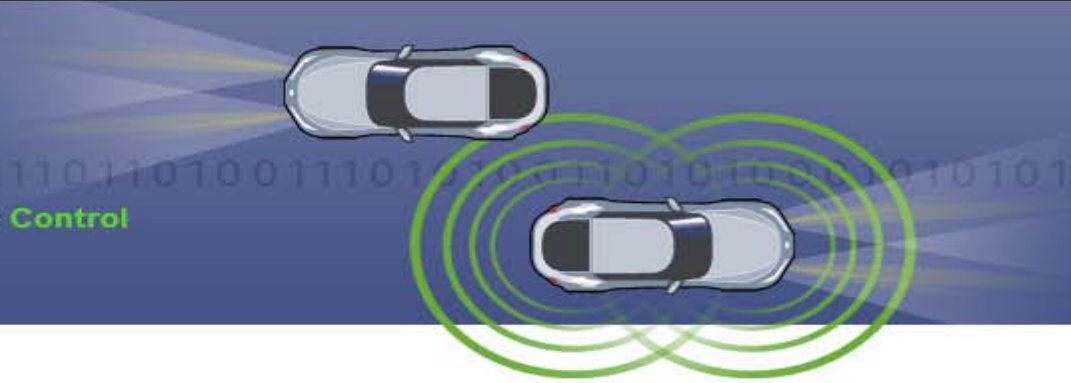


AVEC 10

10th International Symposium on Advanced Vehicle Control

August 22-26 2010
Loughborough University, UK



AVEC 10 Summary

10th International Symposium on Advanced Vehicle Control

Sunday 22nd August – Thursday 26th August 2010

Burleigh Court, Loughborough University, Loughborough, UK

Organised under FISITA patronage by Loughborough University in
association with The Society of Automotive Engineers of Japan

AVEC 10

Support & Sponsorship



Supported by

The American Society of Mechanical Engineers
The International Association for Vehicle System Dynamics
The Japan Society of Mechanical Engineers
The Institution of Mechanical Engineers
The International Federation of Automatic Control
IFAC Technical Committee on Automotive Control

Sponsored by

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International Scientific Committee



Chairperson

T Gordon (USA)

M Abe (Japan)

A Alleyne (USA)

M Best (UK)

D Cole (UK)

S Espie (France)

T Fujioka (Japan)

Y Furukawa (Japan)

J Gerdes (USA)

T Gordon (USA)

K Guo (China)

J Hedrick (USA)

S Heo (Korea)

C Hong (Taiwan)

S Horiuchi (Japan)

D Hrovat (USA)

T Inagaki (Japan)

R Jones (UK)

I Kageyama (Japan)

K Li (China)

P Lugner (Austria)

G Mastinu (Italy)

M Nagai (Japan)

S Nordmark (Sweden)

K Park (Korea)

J Pauwelussen (Netherlands)

H Peng (USA)

G Rizzo (Italy)

R Sharp (UK)

T Takahashi (Japan)

E Tseng (USA)

S Tsugawa (Japan)

M Valasek (Czech Republic)

P Venhovens (Germany)

H Wallentowitz (Germany)

K Yi (Korea)

AVEC 10

UK Organisation



Chairperson

Dr Matt Best

Loughborough team

Georgios Mavros : MIRA visit

Rob Flint : Website

Susan Taylor : Administrator

Nikhil Garrett : Administrator

Gale Haywood : Administrator

Heidi Spencer : Support

Adrian Garratt : Burleigh Court

Emma Boynton : Burleigh Court

Prof Keith Burnham (Coventry University)

Prof David Cebon (Cambridge University)

Dr David Cole (Cambridge University)

Prof David Crolla (Sunderland University)

Dr Peter Jones (Warwick University)

Dr Warren Manning (Manchester Metropolitan University)

Dr James Marco (Cranfield University)

Prof Atanas Popov (Nottingham University)

Prof Robin Sharp (Imperial College , London)

Prof Paul Shayler (Nottingham University)

Prof Richard Stobart (Loughborough University)

Prof Nick Vaughan (Cranfield University)

Dr Ric Cooke (Mercedes GP)

Dr Andrew Deakin (Renault F1)

Dr Jim Farrelly (Ricardo)

Dr Damian Harty (Prodrive)

Dr Dave Waddell (Nissan)

Dr Bob Williams (Jaguar / LandRover)

Dr Anthony Best (Anthony Best Dynamics)

Symposium Topics



SEVERN : Chassis Control (8) : Vehicle Dynamics & Control, Suspension and Steering

SWIFT : Safety Systems (8) : Driver Assistance, Rollover, Autonomous Systems etc

DERWENT : Modelling, Identification, Estimation, Sensor & Actuator (6)

SOAR : Driver Behaviour and Modelling (6)

AVON : Powertrain, Engine, Traction & Braking (4)

AVON : Electric, Hybrid & Energy Efficient Vehicles (4)

Motorcycle Dynamics & Control (2)

Commercial Vehicles (1)

Advanced Concept Vehicles (1)



Innovation by In-Wheel-Motor Drive Unit
Satoshi Murata, Toyota (Japan)

Control Innovation in Motorsport
Damian Harty, Prodrive (UK)

Control Opportunities in Engine Management
Keith Glover, Cambridge University (UK)

25 Years Driving Simulator Research for Active Safety
Wilfried Kaeding, Daimler (Germany)

Active Safety
Erik Coelingh, Volvo (Sweden)

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Vehicle Demonstrations



Michael Benson, Anthony Best Dynamics, UK
Robot Controlled Vehicle

Matthias Lidberg, Chalmers University, Sweden
Active Differential

Daniel Lechner, INRETS, France
DIARI Maximum Cornering Speed

Andrew Odhams, Cambridge University, UK
Active Steer HGV Trailer

Lorenzo Pinto, MIRA, UK
Hybrid Vehicle Yaw Control

Tim Edwards & Richard Adams, MIRA, UK
Motorcycle Safety Systems & MIRA tour



Call for Papers :

202 Abstracts Received

**25 Members of ISC reviewed abstracts to determine acceptance
Marginal and rejected abstracts were further reviewed by ISC and local Chair**

186 Abstracts Accepted

159 Papers Received

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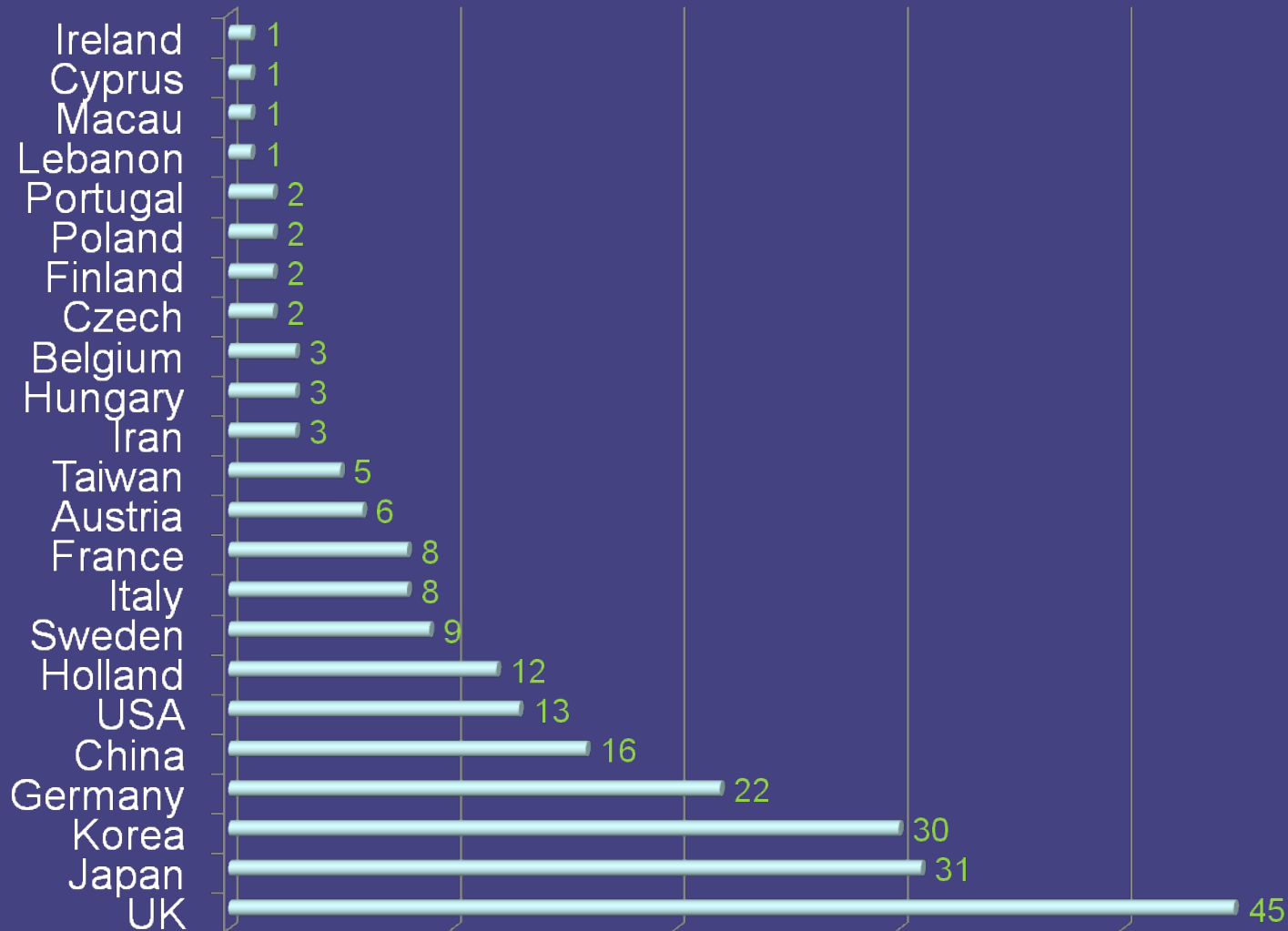
Paper & Attendance History



	papers	delegates
AVEC '92 : Yokohama, Japan	87	272
AVEC '94 : Tsukuba, Japan	90	228
AVEC '96 : Aachen, Germany	95	260
AVEC '98 : Nagoya, Japan	130	319
AVEC '00 : Michigan, USA	113	228
AVEC '02 : Hiroshima, Japan	153	276
AVEC '04 : Arnhem, Netherlands	150	282
AVEC '06 : Taipei, Taiwan	167	200
AVEC '08 : Kobe, Japan	154	250
AVEC 10 : Loughborough, UK	164	229

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Registered Delegates by Country

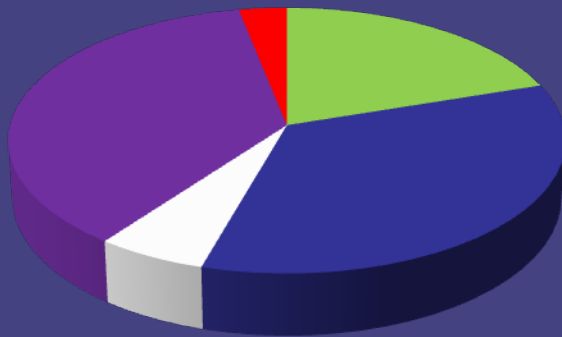


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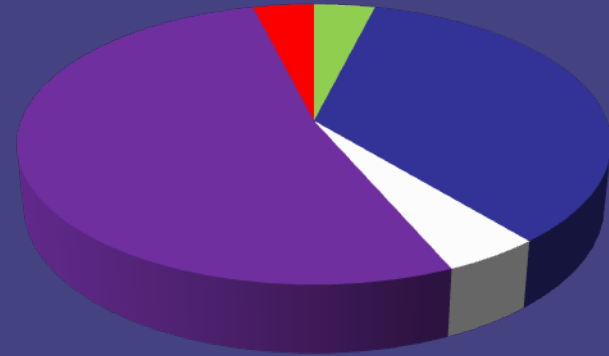
Registered Delegates by Region



2010



2008



■ UK

■ Europe

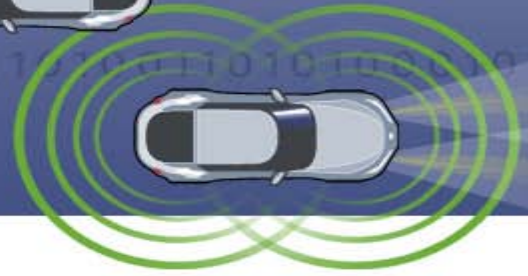
■ America

■ Far East

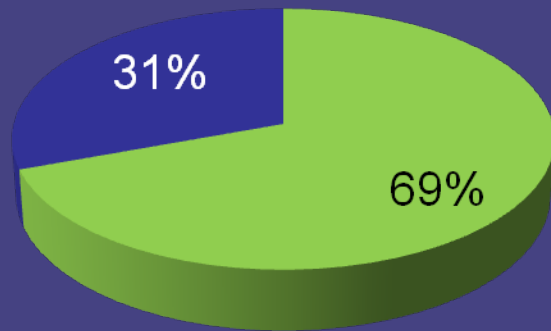
■ Rest of World

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Academic / Industry

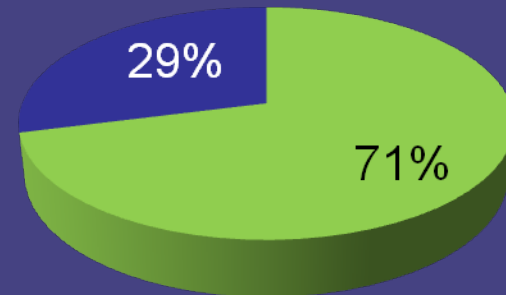


2010



■ Academic

2008



■ Industry

AVEC 10

Review of Best Papers



The review process considered candidates for AVEC10 best paper, and also for invitation to submit extended papers to a special issue of Vehicle System Dynamics Journal

25 Members of ISC reviewed abstracts to identify 52 possible candidates

10 Members of UK organising committee reviewed full papers to provide longlist of 17 papers

7 Members of ISC formed judging panel to decide shortlist of 8 papers

Judging panel attended all 8 presentations to decide 3 best papers

**10 - 15 papers will be invited to submit Journal papers
(these are not yet confirmed)**

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AVEC10 Best Papers



Highly Commended Papers

(in order of programme)

AVEC 10

Highly Commended Papers



Precise Localization using Tightly Coupled Integration based on Trajectory Estimated from GPS Doppler

Yoshiko Kojima, Noriyoshi Suzuki, Yoshikazu Hattori, Eiji Teramoto

A Robust Lateral Vehicle Dynamics Control

Giovanni Palmieri, Miroslav Baric, Francesco Borrelli, Luigi Glielmo

Robust Nonlinear Observer To Estimate Road Friction Coefficient and Tire Slip Angle

Changsun Ahn, Huei Peng, H. Eric Tseng

A New Hybrid Stability-control System with Understeer-prevention Control based on G-Vectoring concept

Junya Takahashi, Makoto Yamakado, Shinjiro Saito, Atsushi Yokoyama

AVEC 10

Highly Commended Papers



Advanced Yaw Motion Control of a Hybrid Vehicle using Twin Rear Electric Motors

Lorenzo Pinto, Simon Aldworth, Martin Watkinson, Paul Jeary, Maria Franco-Jorge

Vehicle Dynamic Control for a 4 In-Wheel-Motored EV based on Identification of Tire Cornering Stiffness

Lu Xiong, Zhuoping Yu, Yufeng Meng

The Compliance Screw Axis of a Suspension and its Effect on Vehicle Behavior

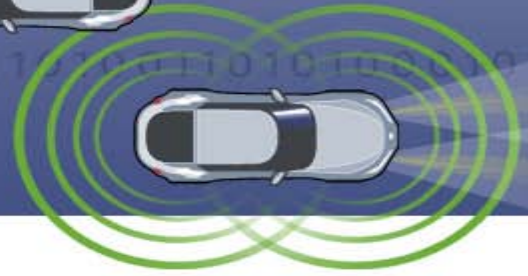
Jae Kil Lee, Seon Pyung Kim, Young Ho Oh

Development of Path Tracking Control System based on Model Predictive Control using Infra-Structured Sensors

Wongun Kim, Dongwook Kim, Kyongsu Yi, H. Jin Kim

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AVEC10 Best Papers



Best Paper Awards

(in no particular order)

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AVEC10 Best Papers



Precise Localization using Tightly Coupled Integration based on Trajectory Estimated from GPS Doppler

Yoshiko Kojima, Noriyoshi Suzuki, Yoshikazu Hattori, Eiji Teramoto

Japan

Safety Systems (SWIFT)

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AVEC10 Best Papers



Advanced Yaw Motion Control of a Hybrid Vehicle using Twin Rear Electric Motors

Lorenzo Pinto, Simon Aldworth, Martin Watkinson, Paul Jeary, Maria Franco-Jorge

UK

Energy Efficient Vehicles (AVON)

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AVEC10 Best Papers



Robust Nonlinear Observer To Estimate Road Friction Coefficient and Tire Slip Angle

Changsun Ahn, Huei Peng, H. Eric Tseng

USA

Models, Sensing and Estimation (DERWENT)