



AVEC '14 Summary

12th International Symposium on
Advanced Vehicle Control
September 22- 26, 2014

Tokyo University of Agriculture & Technology
Tokyo, JAPAN



Organizer

AVEC '14 Organizing Committee in JSAE

In association with

- International Association for Vehicle System Dynamics (IAVSD)
- International Federation of Automotive Engineering Societies (FISITA)
- IFAC, Technical Committee on Automotive Control (IFAC TC7.1)
- Japan Society of Mechanical Engineers (JSME)
- Society of Instrument and Control Engineers (SICE)



Three Chairs of AVEC '14



Organizing Chair
Prof. S. Takehara
Kindai Univ.



General Chair
Prof. M. Nagai
Japan Automobile
Research Institute



ISC Chair
Prof. S. Horiuchi
Nihon Univ.



Local Committee



Chair

Prof. Pongsathorn Raksincharoensak

TUAT



Keynote Speeches

Monday 9:30 – 10:20

Dr. Yasuji Shibahata
(former Honda R&D Executive Chief Engineer)

**Vehicle Dynamics Control – What Should
be Controlled and What Should be the
Index?**





Keynote Speeches (cont.)

Tuesday 9:00 – 9:40

Prof. Huei Peng (Univ. of Michigan)
Dr. Peter Sweatman (UMTRI Director)

**A Large Scale Field Test of
Connected and Automated Vehicle –
Lessons Learned and Future Outlook**





Keynote Speeches (cont.)

Thursday 9:00 – 9:40

Prof. Peter Pfeffer
(Munich University of Applied Sciences)

**The Challenges in Automotive and
Chassis Engineering**





Special Interest Session

(Tuesday 10:10 – 11:40)

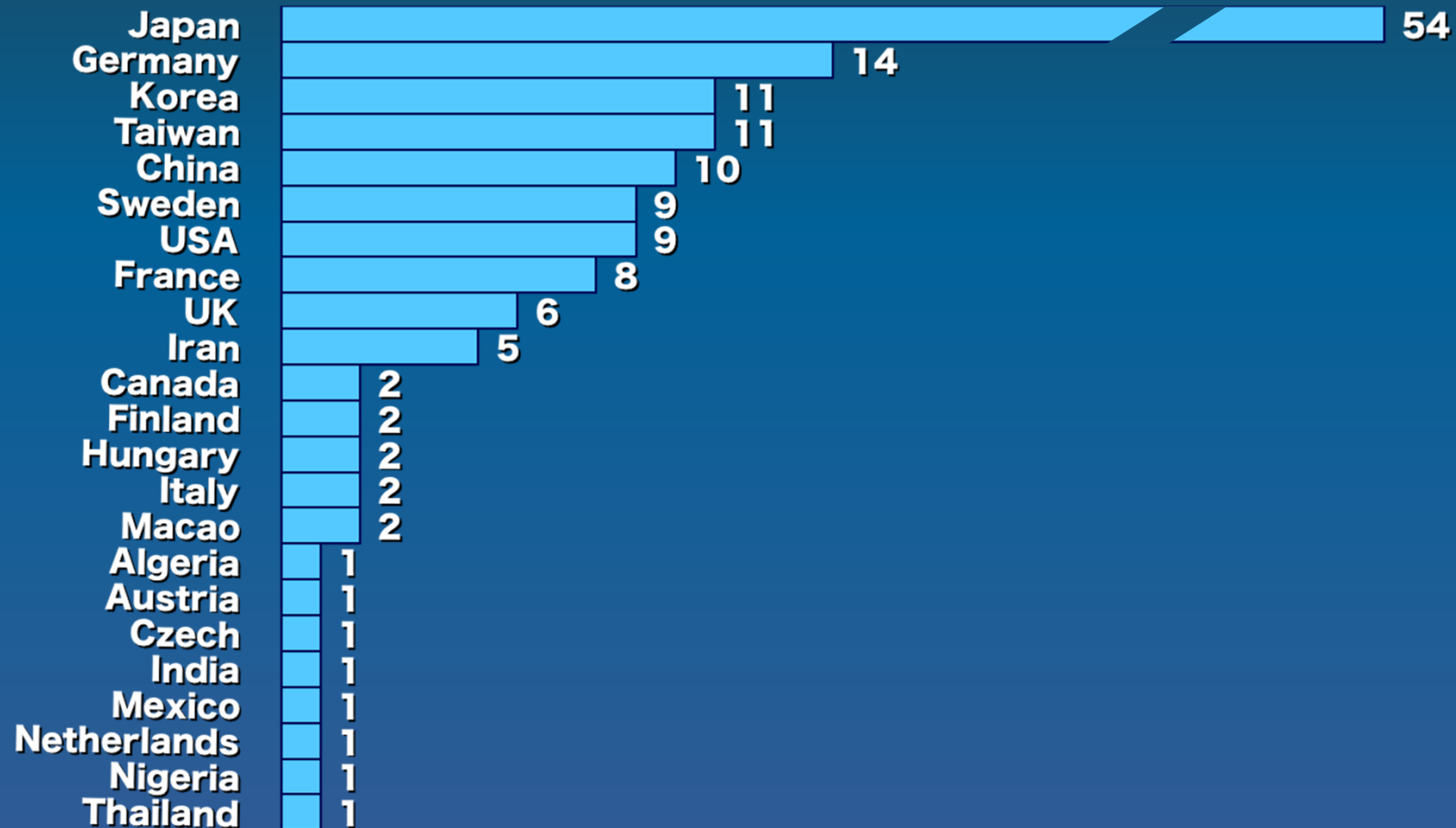
Automated and Connected Driving

- **Masao Fukushima** (Nissan Motor)
Autonomous Drive in NISSAN
- **Mitsuhsa Shida** (Toyota Motor Corporation)
Automated Highway Driving Assist
- **Dr.-Ing. Adrian Zlocki** (fka, Aachen)
Road to Automated Driving – State of the Art and Future Direction
- **Dr.-Ing. Roman Henze** (TU Braunschweig)
Efficient Function Development, Testing and Optimization on the Road to Automated Drive



Submitted Abstracts

155 abstracts from 23 countries





Number of Final Papers

Year	Place	Papers
AVEC '92	Yokohama, Japan	87
AVEC '94	Tsukuba, Japan	90
AVEC '96	Aachen, Germany	95
AVEC '98	Nagoya, Japan	130
AVEC '00	Michigan, USA	113
AVEC '02	Hiroshima, Japan	153
AVEC '04	Arnhem, Netherlands	150
AVEC '06	Taipei, Taiwan	167
AVEC '08	Kobe, Japan	154
AVEC '10	Loughborough, UK	164
AVEC '12	Seoul, Korea	231
AVEC '14	Tokyo, Japan	136



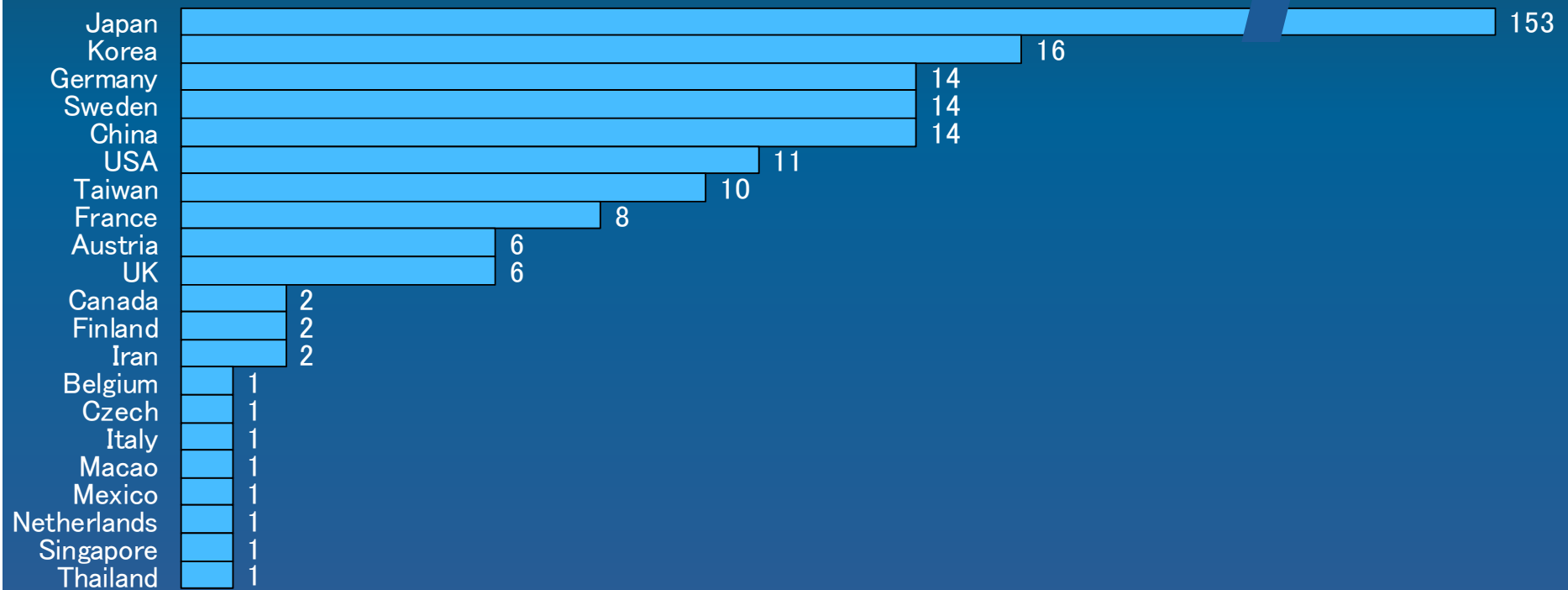
Number of Delegates

Year	Place	Delegates
AVEC '92	Yokohama, Japan	272
AVEC '94	Tsukuba, Japan	228
AVEC '96	Aachen, Germany	260
AVEC '98	Nagoya, Japan	319
AVEC '00	Michigan, USA	228
AVEC '02	Hiroshima, Japan	276
AVEC '04	Arnhem, Netherlands	282
AVEC '06	Taipei, Taiwan	200
AVEC '08	Kobe, Japan	294
AVEC '10	Loughborough, UK	229
AVEC '12	Seoul, Korea	333
AVEC '14	Tokyo, Japan	266



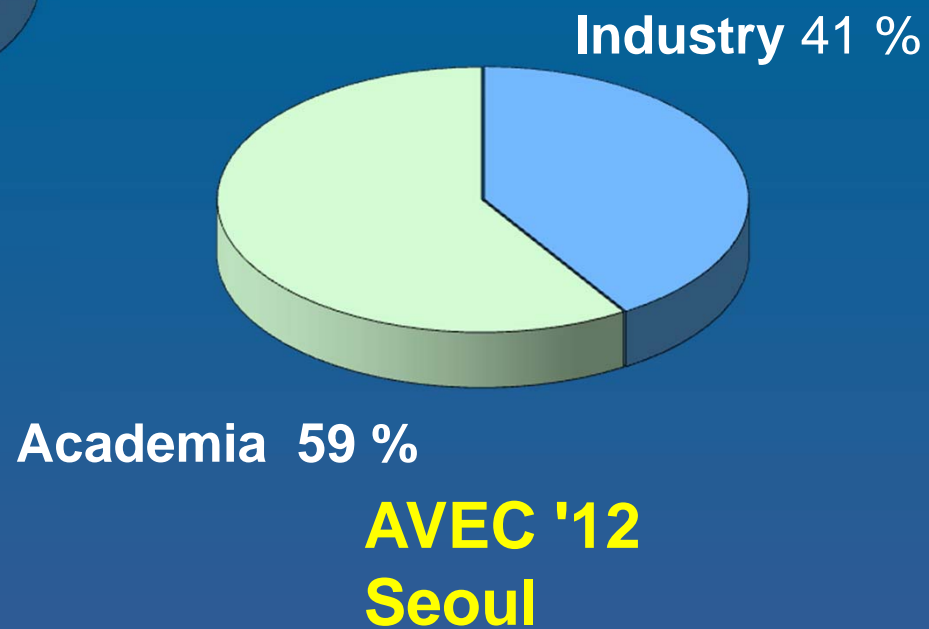
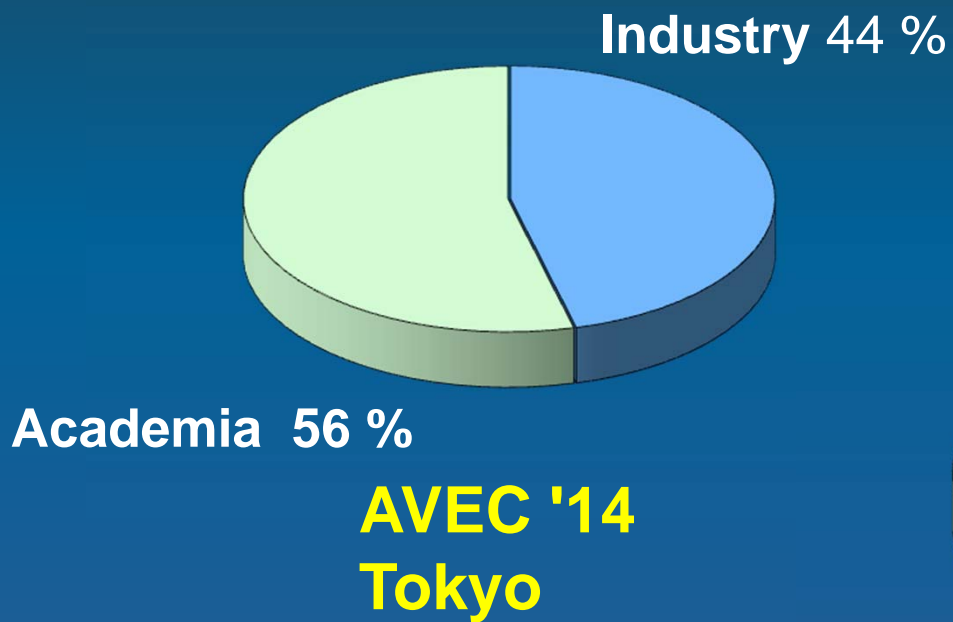
Delegates by Country

Over 260 delegates from 21 countries





Delegates: Industry/Academia





Technical Visits (Wednesday)

- **Course A** Twin Ring Motegi (Honda)
Active Safety Training Park
- **Course B** Nissan GRANDRIVE
Driving of the Latest Nissan Vehicles
- **Course C** Hino Motors
Customer Technical Center
- **Course D** Japan Automobile Research Institute
Driving Simulator, Augmented Reality Vehicle



Social Events

Welcome Reception

Monday 18:00 – 20:00

TUAT Memorial Hall “Ellipse”



AVEC '14 Party

Wednesday 19:00 – 21:40

Tokyo Bay Cruise





Review Process of Best Paper

- All submitted abstracts were evaluated by ISC members and 45 possible candidates were selected
- Organizing committee members in Japan reviewed full papers to provide a list of 25 papers
- 10 members of ISC reviewed full papers to narrow down the list to 10 papers
- ISC members attend presentation of all 10 papers to decide best papers



Best Paper Awards Finalists 1/3

(Listed in no particular order)

Direct Yaw Moment Control and Power Consumption of In-Wheel Motor Vehicle

Takao Kobayashi, Etsuo Katsuyama, Hideki Sugiura, Eiichi Ono, Masaki Yamamoto
Toyota Central R&D Labs., Inc., Toyota Motor Corporation

Road Image Generation with Probe Vehicle Data Using Low-Cost Sensors for ADAS

Junichi Meguro, Hiroyuki Ishida, Chunzao Guo, Koichiro Yamaguchi, Yoshiko Kojima
Toyota Central R&D Labs., Inc.

Roll Control Using Tire Longitudinal Forces Integrated with Tire Force Distribution of Full Drive-by-Wire Electric Vehicle

Yuta Suzuki, Yoshio Kano, Masato Abe, Tomohiro Sugai, Katsutoshi Mogi, Junichi Hirata, Nobuyuki Suzuki
Kanagawa Institute of Technology, NTN Corporation

Predictive Pedestrian Collision Avoidance with Driving Intelligence Model Based on Risk Potential Estimation

Ryosuke Matsumi, Pongsathorn Raksincharoensak, Masao Nagai
Tokyo University of Science, Tokyo University of Agriculture and Technology, Japan Automobile Research Institute



Best Paper Awards Finalists 2/3 (Listed in no particular order)

Risk-Potential Based Motion Planning and Control of Proactive Driving Intelligence System for Enhancing Active Safety

Takahiro Hasegawa, Pongsathorn Raksincharoensak, Masao Nagai

Tokyo University of Agriculture and Technology, Japan Automobile Research Institute

Lane Keeping Assistance with Learning-Based Driver Model and Model Predictive Control

Stéphanie Lefèvre, Yiqi Gao, Dizan Vasquez, H. Eric Tseng, Ruzena Bajcsy, Francesco Borrelli

University of California, Berkeley, Inria, Ford Research Laboratories

An Autonomous Lanekeeping System for Vehicle Path Tracking and Stability at the Limits of Handling

Nitin R. Kapania, J. Christian Gerdes

Stanford University

Regeneration of the Trajectory for the Automatic Parallel Parking with Geometric Continuous-Curvature Path Planning

Hélène Vorobieva, Nicoleta Minoiu-Enache, Sébastien Glaser, Saïd Mammar

Renault



Best Paper Awards Finalists 3/3 (Listed in no particular order)

Stochastic Predictive Control of Autonomous Vehicles in Uncertain Environments

Ashwin Carvalho, Yiqi Gao, Stéphanie Lefèvre, Francesco Borrelli

University of California at Berkeley

Estimation of the driver's steering intention for preceding car with the brain current distribution estimation

Toshihito Ikenishi, Takayoshi Kamada, Masao Nagai

Tokyo University of Agriculture and Technology

Tire Force Estimation Utilizing Wheel Torque Measurements and Validation in Simulations and Experiments

Anton Albinsson, Fredrik Bruzelius, Mats Jonasson, Bengt Jacobson

Chalmers University of Technology, Volvo Cars



Best Paper Awards (in no particular order)

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Roll Control Using Tire Longitudinal Forces Integrated with Tire Force Distribution of Full Drive-by-Wire Electric Vehicle

Yuta Suzuki, Yoshio Kano, Masato Abe, Tomohiro Sugai, Katsutoshi Mogi, Junichi Hirata, Nobuyuki Suzuki

Kanagawa Institute of Technology, NTN Corporation



Finally...

Thank you very much for your interest and participation
in AVEC '14.

We look forward to seeing you again in AVEC'16 in
Munich.