

Advance Program

IV2001

IEEE Intelligent Vehicles Symposium

National Institute of Informatics, Tokyo, Japan

May 14-17, 2001

Sunday, May 13, 2001

Tutorial I(13:00-15:00)

Heterogeneous communication and navigation infrastructures for ITS and related mobile services

Dr. Michael ANGERMANN Dr. Uwe C. FIEBIG
(DLR) Germany

Break Time (15:00-16:00)

Tutorial II(16:00-18:00)

An Overview on AVCSS Research Activities

Sadayuki TSUGAWA (MITI) Japan

Monday, May 14, 2001

Session 1: Lane Recognition (9:10-10:50)

1-1 Robust Lane Recognition Using Vision and DGPS Road Course Information

Axel GERN, Thomas GERN, Uwe FRANK, Gabi BREUEL Germany

1-2 Detecting Lane Boundaries With Circular Shape Models

Bing MA, Sridhar LAKSHMANAN, Alfred O. HERO USA

1-3 Road sides recognition under unfriendly lightning conditions

R. AUFRERE, R. CHAPUIS, F. CHAUSSE, J. ALIZON France

1-4 Single Image Road Model Identification for Mountain Roads

Erwin R. BOER, Ahna GIRSHICK USA

1-5 Snowcat track detection in snowy environments

Albert BROGGI, Virgilio CANTONI, Ugo VALLONE, Alessandra FASCIOLI ITALY

Coffee Break (10:50-11:00)

Session 2: Object Classification (11:00-12:40)

2-1 Model- Based Object Classification and Object Tracking in Scenes from Range-Images

Klaus C.J. DIETMAYER, Jan SPARBERT Daniel STRELLER Germany

2-2 An Algorithm for Distinguishing the Types of Objects on the Road using laser Radar and Vision

Noriko SHIMOMURA, Kazumi FUJIMOTO Japan

2-3 An Obstacle Detection Method by Fusion of Radar and Motion Stereo

Takeo KATO, Yoshinori NINOMIYA, Ichiro MASAKI Japan

2-4 Vehicle occupancy monitoring with optical 3D-sensors

M. FRITZSCHE, M. OBERLANDER, T. SCHWARZ, B. WOLTERMANN, H. RIEDEL, B. MIRBACH Germany

2-5 Integrated Visual Detection of Traffic Infrastructure

L. PALETTA, G. PAAR A. WIMMER, G. RUPPERT, M. SCHARDT Austria

Lunch (13:00-14:30)

Session 3: Interactive Session I(13:00-14:30)

3-1 Human Interface Adapted to Equipment in Automobile

Shunichi NUMAZAKI, Zenichi OTSUKA Miwako DOI Japan

3-2 How Condition Directed Maintenance Methods can Help in Detecting and Diagnosing Dangerous Evolutions of the Driver Behaviour

JC. POPIEUL P. SIMON P. LOSLEVER France

3-3 A Testing Procedure and Method for Qualifying Cameras for Automotive Use Under High Glare Conditions

S. EBENSTEIN, J. RANKIN, Y. RODIN, G. SMITH T. MEITZLER USA

3-4 The Automatic Incident Detection Using Data From Vehicle Detectors

Osamu HATTORI Hiroshi SHIMOMURA Kenji TENMOKU Japan

3-5 Automatic Recognition of Road Signs

Yasuo INOUE, Naoto ISHIKAWA, Masato NAKAJIMA Japan

3-6 A Visual Attention System based on Feature of Color Contrast

Kenji MURAYAMA, Yoshihiro OKADA Japan

3-7 Development Of Visual System For Agricultural Walking Robot

Masaru TOKUDA Japan

3-8 CARSENSE-New environment sensing for advanced driver assistance systems

Jochen LANGHEIM France

3-9 Short Range Radar Utilizing Standing Wave of Microwave or millimeter Wave

Tetsuji UEBO, Takashi KITAGAWA, Tadamitsu IRITANI Japan

3-10 Supervisory System for Vehicles according to correspondence of Vehicle IDs between Real Environment and Tracking Images

Shunsuke KAMJO Katsushi IKEUCHI, Masao SAKAUCHI Japan

- 3-11 **Toward Better Visibility of Road Information Boards - the Influence of Spatial Frequency Adaptation on Visual Acuity –**
 Yasuji NAGAI, Kazuhiro UCHIDA, Kouji UEDA, Hiroshi ONODERA, Toshimitsu TANAKA, Noboru SUGIE Japan
- 3-12 **Low-Gray Image Generating by MP Algorithm**
 Xiang RUAN, Haihong ZHANG, Hiromitsu HAMA Japan
- 3-13 **Bird's-Eye View System for ITS**
 Makoto SEKITOH, Koichi TOYOTA, Toshinobu FUJII, Tadahiko KIMOTO, Masayuki TANIMOTO Japan
- 3-14 **High accurate positioning and mapping in urban area using laser range scanner**
 Huijing ZHAO, Ryosuke SHIBASAKI Japan
- 3-15 **Design of Automatic Incident Detection Algorithm on Freeways**
 Guiyan JIANG, Huimin WEN China

Session 4: Obstacle Avoidance (14:30-16:10)

- 4-1 **Development of Night Vision System**
 Takayuki TSUJI, Hiroshi HATTORI, Masahito WATANABE, Nobuharu NAGAOKA Japan
- 4-2 **Image Guided Positioning by Using a Complex-Valued Associative Memory for Intelligent Navigation Systems**
 Hiroyuki AOKI, Yukio KOSUGI Japan
- 4-3 **Obstacle Detection Using a Deformable Model of Vehicles**
 Sandra DENASI, Giorgio QUAGLIA Italy
- 4-4 **A car integrated system for moving obstacles avoidance**
 Paola CARREA, Antonella FERRARA, Andrea COLOMBO, Luisa GIACOMINI, Alessandro ROVIDA Italy
- 4-5 **Early detection of potentially harmful traffic situations with children**
 U.FRANK, A.JOOS, B.AGUIRRE Germany

Session 5: Sensor (16:20-18:00)

- 5-1 **New Sensor for 360-degree Vehicle Surveillance Innovative Approach to Stop & Go, Lane Change Assistance and Pedestrian Recognition**
 Volker WILLHOEFT, Kay FURSTENBERG Germany
- 5-2 **76GHz High Performance Radar Sensor featuring Fine Step Scanning Mechanism utilizing NRD Technology**
 Takatoshi KATO, Toru TANOZAKI, Toru ISHII, Hiroaki TANAKA Japan
- 5-3 **Distance Range Based Segmentation in Intelligent Transportation System: Fusion of Radar And Binocular Stereo**
 Yajin FANG, Ichiro MASAKI, Berthold HORN USA
- 5-4 **Development of Stereo Image Recognition System for Active Driving Assist**
 Keiji HANAOKA, Yoshiyuki SAGAWA Japan

5-5 Town Digitizing -Recording of Street Views by using ODVS & GPS-

Koji KATO, Hiroshi ISHIGURO, Matthew BARTH USA

Tuesday, May 15 2001

Session 6: Lane Keeping (9:00-11:00)

- 6-1 **Feedforward and Feedback Control for Driving Assistance and Vehicle Handling Improvement by Active**
 Said MAMMAR France
- 6-2 **Automated Steering Systems based on Model Reference Control**
 Takanori FUKAO, Kenji MORI, Shogo MIYASAKA, Norihiko ADACHI, Koichi OSAKA Japan
- 6-3 **Supervision Strategies of A Fuzzy Lateral Guidance Automotive Copilot System**
 Frederic BONNAY, Zyed ZALILA, Christophe BRASSART, Florent COFFIN, France
- 6-4 **A study on Lateral Control for Automated Driving on Heavy truck Vehicles**
 Stefania MARTIN, Vincenzo MURDOCCO Italy
- 6-5 **Highway Lane Change Assistant**
 Milan RUDER, Wilfried ENKELMANN, Rainer GARNITZ Germany
- 6-6 **Design of robust steering system for an autonomous vehicle**
 Min-Hong HAN Korea

Coffee Break (11:00-11:10)

Session 7: Projects (11:10-12:50)

- 7-1 **The U.S. Army's Vehicle Intelligence Program (AVIP) : The future of Manned, Wheeled Tactical Vehicles**
 H.E.(Bill)Knee, David J.Gorsich USA
- 7-2 **Research activity of the European Commission on Active safety : Driver assistance systems.**
 Fabrizio MINARINI Belgium
- 7-3 **Barriers To Motorway Traffic Operations, And Their Potential Solution**
 Mark RACKSTONE, Mike McDONALD UK
- 7-4 **Supporting The Safety of Driving at The Signalized Intersections**
 Atsushi MAEOKA Japan
- 7-5 **Behavioural Adaptation To Multiple In-Vehicle Intelligent Transport Systems: Report On An Australian Research Program**
 Michael A.REGAM, Claes TINGVALL, Thomas TRIGGS, David HEALY, Laurie WILLWAMS Australia

Lunch (12:50-13:10)

Session 8: Interactive Session II (13:10-14:40)

- 8-1 **Evaluation of traffic effect to driver using driver's behavior and detecting system in vehicle (Human-machine Interfaces)**
 Bong-Jo CHUNG, Jae-Beom PARK, Ju-Young KIM, Myungsoon CHANG Korea

- 8-2 **Applications of New Information Technologies in the Sugar Industry**
Raluca RAICU, Michael A P TAYLOR
Australia
- 8-3 **Open Telematics Framework**
Steven BUYTAERT, Ingeborg NOREILD
Belgium
- 8-4 **An Assessment of AVCS Maglev Hybrid Personal Transport System**
Sang Hyup LEE
Korea
- 8-5 **Neural Network Based Engine Fault Detection And Diagnosis**
Shubhalaxmi J KHER, P.K CANDE
India
- 8-6 **A Modelling Approach To Forecast The Future ITS Market Size in Korea**
Sanghoon Bae
Korea
- 8-7 **Soft-Hard Implementation of Navigation Approach of an IAV**
K.ACHOUR, O.HACHOUR, M.BENKHELIF
Algeria
- 8-8 **Alarm Systems for drivers on motorways and urban highways**
Pierre KOPFF
France
- 8-9 **Human Machine Interfaces of DIS and CarPCs**
Peter ROESSGER
Germany
- 8-10 **Robotic Communication Terminals as an Advanced-ITS for the Elderly and the Disabled**
Ikuko Eguchi YAIRI, Seiji IGI
Japan
- 8-11 **A Study on The Operation Timing of Automated Assistance System for Taking Driver's Manual Operation Timing into Account**
Hiroshi TAKAHASHI, Kouichi KURODA
Japan
- 8-12 **In-vehicle Information infrastructure and Human Interface**
Ichiro KATAOKA, Koji ISHII, Masayuki OGAWA
Japan
- 8-13 **Vehicle Model for High Accuracy Vehicle State Estimation**
Masaki WADA, Kang Sup YOON, Hideki HASHIMOTO
Japan
- 8-14 **The Implications of the Next Generation of Navigation Map Databases on Dynamic Route Guidance and Advanced Driver Assistance Systems for Passenger and Commercial Vehicles**
Salahuddin KHAN, Michele Roser-HERBST, Harry VOCCOLA
USA
- 8-15 **Longitudinal Control of Low Speed Automated Vehicles Using a Second Order Sliding Mode Control**
L.NOUELIERE, S.MAMMAR
France
- 8-16 **Cellular Telephone Use while Driving: Effects on Driver Mental Workload**
Roberto TOKUNAGA, Toru HAGIWARA, Seiichi KAGAYA
Japan
- 8-17 **Intelligent Idling Stop System**
Katsushi WAKABAYASHI, Naok HASEGAWA
Japan
- 8-18 **Displaying Method for On-board Display Adaptive to Brightness of Driving Environment**
Yoshiharu HIRANO, Akira SUZUKI, Tomoaki NAKANO, Shin YAMAMOTO
Japan
- 8-19 **The Application of Combination Genetic Algorithm in Optimal Design of Vehicle Handling Performance**
Konghui Guo, Minglan Chen, Changfu Zong, Baizhong Lin
China
- 8-20 **Autonomous Controlled Vehicle with Two Independent Crawlers for Agriculture**
Tsuneo KAWAMURA
Japan
- Session 9: AMI-C (14:40-15:30)**
- 9-1 **Convergence 2000**
Hideo FURUKAWA
Japan
- 9-2 **Vehicle Interface in Release 1**
Takeshi AKATSUKA
Japan
- 9-3 **OEM/AMI-C Low Speed Bus Gateway**
Ricald WONG
Japan
- Session 10: DEMO2000(MITI)(15:30-16:30)**
- 10-1 **An Overview on Demo 2000 Cooperative Driving**
Sadayuki TSUGAWA, Shin KATO, Kiyohito TOKUDA, Takeshi MATSUI, Haruki FUJII
Japan
- 10-2 **Platoon Formation Control in Demo 2000 Cooperative Driving**
Shin KATO, Naoko MINOBE, Sadayuki TSUGAWA
Japan
- 10-3 **Inter-Vehicle Communications Technologies for DEMO-2000**
Kiyohito TOKUDA
Japan
- Coffee Break (16:30-16:40)**
- Session 11: DEMO2000 (AHSRA)(16:40-18:20)**
- 11-1 **Road-to-Vehicle Communication System for Smart Cruise 21 Demo 2000**
Masafumi MORI, Yasushi TANAKA, Yoshia SAKAI, Norimasa EJIMA, Hiroshi INOUE, Akihiro KAMEMURA
Japan
- 11-2 **Policy for Practical Application of the Advanced Cruise-Assist Highway System**
Masafumi MORI, Yasushi YANAKA, Kazuhiko YOKOCHI, Yasuyuki YOBA, Katou KAZUO, Akio HOSAKA, George KAMATA
Japan
- 11-3 **Joint Proving Test & Smart Cruise 21 Demo 2000**
Masafumi MORI, Yasushi TANAKA, Yasuyuki TODA, Shuichi IKENO, Takaaki KOBAYASHI, Hiroyuki MIZUTANI, Yoshiro SEKI
Japan
- 11-4 **System Design for Smart Cruise 21 Demo 2000**
Masafumi MORI, Takeshi SUZUKI, Yukihisa SASADA, George KAMATA, Takeo NISHIKAWA
Japan

11-5 Development of the Advanced Cruise-Assist Highway System Road Sensor System

Masafumi MORI, Takehiko SUZUKI, Yukihisa SASADA, Yukio INABA, Hideki WATANABE, Shigeki YAMAKATA Japan

Wednesday, May 16.2001

Session 12: Obstacle Avoidance (9:00-10:40)

12-1 Lateral Vehicle Control for Avoidance Collision in Emergency Condition

Sebastiano CAMPO, Angela CHINU Italy

12-2 Scenario Parsing in Transit Bus Operations for Experimental Frontal Collision Warning Systems

Ching-Yao CHAN, Xi-Qin WANG, Wei-Bin ZHANG USA

12-3 Collision avoidance for automated urban vehicles

Michel PARENT, Manuel CRISOSTOMO France

12-4 Image Projection based Parking Assist System

Osamu OKAZAKI, Yuichi KUBOTA, Toshiyasu KATTSUNO, Yu TANAKA, Masahiko NAKAMURA Toshiaki KAKINAMI, Yoshifumi IWATA Japan

12-5 Novel functions for Automatic Rear and Side Surveillance -Succession vehicles detection and Image diagnosis in practical driving condition-

Nobuyoshi ENOMOTO, Kei TAKIZAWA, Yasuhiro Tanoguchi, Yasunori TAKASE Japan

Coffee Break (10:40-10:50)

Session 13: Driver Assistance (10:50-12:50)

13-1 Driving in night time conditions : DARWIN, an advanced driver support system to enhance driver's perception of the external scenario

Luisa ANDREONE, G.BURZIO, S.DAMIANI, Philip BARHAM, Xiang - Hua ZHANG Italy

13-2 Non-Standard Safety Enhancements

Tankut ACARMAN, Yaodong PAN, Umit OZGUNER USA

13-3 A priori assessment of driver assistance systems with respect to capacity and safety

Morgan MANGEA, Jean-Mark BLOSSEVILLE France

13-4 Improving diagnosis with wavelets for driver impairment detection systems

Alfredo SANTANA-DIAZ, Bruno JAMMES, Daniel ESTEVE, Neil HERNANDEZ-GRESS France

13-5 A Flexible System Architecture for Rapid Algorithmic Prototyping of Multi Sensorial Driver Assistance Systems

Thomas NULLER, Simon FURST Germany

13-6 Anticipatory Route Selection

Barrett W. THOMAS, Chelsea C. White USA

ITS Telecommunication special sessions

Session 14: [invited Talk] (13:50-14:50)

Charley K WATANABE
Ministry of Public Management, Affairs,
Posts & Telecommunications, Japan

Session 15: Inter - Vehicle Communications (14:50-16:30)

15-1 ITS Multicast Services and its DSRC Network Architecture

Tsutomu IWAHASHI, Yuji WADA, Tetsuo MIYOSHI Japan

15-2 Dynamic Reconfiguration of a Software Component System for Vehicles

Xuejun CHEN, Frank HERMES, Matthias STUMPFLE Germany

15-3 Evaluation of Auction and Bidding Algorithms for Resolving Network Resource Competition

Ichiro MIZUNUMA, Ichiro MASAKI Japan

15-4 An Emissions and Energy Reduction at An On-Ramp Highway Using Inter-Vehicle Communications

Ari Widodo, Takaaki HASEGAWA, Sadayuki TSUGAWA Japan

15-5 A study on Inter vehicle Communication Network with CSMA/CA to provide driving information for opposite lane and intersection

Yasuhiko SUZUKI, Makoto ITAMI, Kohji ITOH Japan

Coffee Break (16:30-16:40)

Session 16: ITS Communication Network (16:40-18:00)

16-1 A Study on acquisition and tracking of Vehicle Location using between IVC and RVC dynamic networks

Kouji TSUKAMOTO, Masahiro FUJII, Makoto ITAMI, Kohji ITOH Japan

16-2 Asynchronous CDMA Using Orthogonal Matched Filter For Road To Vehicle Communication

Takeru UTSI, Norimichi HIRANO, Ryouji KOHNO Japan

16-3 5.2GHz Propagation Characteristics and Mutual Interface of Wireless 1394-based Intra-vehicle Networks

Honggang ZHANG, Tomoyuki UDAGAWA, Takemi ARITA, Kazuya TAKAHASHI, Masao NAKAGAWA Japan

16-4 Spread Spectrum Inter-Vehicle Communication and Ranging System with Co-Channel Interference

Katsuya MIZUTANI, Ryouji KOHNO Japan