Welcome to AHB45
Committee on Traffic Flow Theory and Characteristics

January 13, 2016
Self-Introductions Members/Friends

Please don’t forget to sign in!
## Agenda

- **Review and Approval of Minutes**  |  S. Ahn
- **Committee Membership Update**  |  S. Ahn
- **Chair Report**  |  S. Ahn
- **TRB Report**  |  R. Cunard/R. Bertini
- **FHWA Programs & Activities**  |  J. Sturrock
- **SHRP 2 Pooled Fund Pre-solicitation notice for NDS**  |  C. Fay
- **TFTC Subcommittee Reports**
  - SimSub (AHB45(1))  |  M. Hadi/G. List
  - Crowd Flow Dynamics, Modeling and Management (AHB45(2))  |  M. Sarvi/S. Hoogendoorn
  - Connected Automated Vehicles (AHB45(3))  |  S. Mattingly
  - Research Problem Statements  |  M. Hadi
  - Paper Review  |  S. Ahn
  - Greenshields Prize & Awards  |  L. Leclercq
  - Mid-Year Meetings  |  S. Ahn/Attendees
  - Outreach and Diversity  |  S. Hamdar
  - MFD Dataset  |  J. Laval
  - Publication Impact Factors  |  N. Geroliminis/V. Gayah
  - Special Report on Traffic Flow Theory  |  H. Mahmassani
- **Liaison with other Committees**  |  All Attendees
- **International Liaison**  |  Members and attendees
- **Announcements and Future Meetings**  |  All Attendees
- **New Business**  |  All Attendees
Review and Approve Minutes

- **January 13, 2015**
- **August 5, 2015**
- Thanks to Ludovic Leclercq for hosting the meeting in Kobe
- Thanks to Danjue Chen and Nikolas Geroliminis for preparing the minutes!
Membership Update: SimSub

- Thank you George!
  - 2010-2015

- Welcome Mohammed Hadi – New SimSub Chair effective 4/15/16
Thank you Rob!

- Chair: 2009-2015 (Secretary, 2004–2009; Member, 2002–2015)
  - 6 committee meetings, 30 lectern sessions, 16 poster sessions
  - Processed 965 papers
  - 189 TRR publications, 3 TR Circulars, 2 journal special issues
  - 6 summer meetings

- Highlights:
  - Blue Ribbon Committee Award for Community Building and Mentoring
  - Active subcommittees (awards, outreach, webinars)
  - New subcommittee on Connected Automated Vehicles

- Inclusive leader: diverse members, mentoring of young members
Membership Update

- Currently 36 members
  - 24 members (1 vacancy)
  - 5 international
  - 3 young (1 vacancy)
  - 2 state DOT
  - 2 emeritus

- Membership rotation (every three years)
  - 9 members to be rotated off
  - 11 new members effective 4/15/16
Chair Report

- Transition to chair starting 4/15/2015
  - Special calls for paper (4)
  - Workshop proposals (2)
  - Paper review coordination
  - Annual meeting: sessions, workshops and meetings
- New Subcommittee on Traffic Flow Modeling for Connected Automated Vehicles
- Transportation System Simulation Manual
- Always possible to update paper reviewer pool (563 members)
- Future direction for the Committee?
NCHRP Project “Guidelines to Incorporate the Costs and Benefits of Adaptation Measures in Preparation for Extreme Weather and Climate Change” is conducting a survey: https://www.surveymonkey.com/r/N5QCDLV

- Respond by January 22, 2016
- Purpose: better understand the tools, methods, data, and models and decision making-processes that practitioners use to evaluate how adaptation measures for extreme weather and climate change are incorporated into projects
The TRB Technical Activities Council (TAC) is seeking input to improve their Critical Issues in Transportation efforts.

1. What is driving the future research needs of our committee (e.g., reliability, resiliency, technology development, climate change, security)?

2. Focusing on technology development:
   - What are some major impediments to introducing cost-effective technology and techniques into the transportation industry?
   - Are local, state, and the federal government adequately doing their part in the adoption of technology?
   - What future trends (emerging issues) can be anticipated within your committee’s purview?

3. What are some broader drivers of possible change (e.g., demographics and migration, emergence of mega regions, social changes)

4. Other inputs
TRB Report

- Robert Bertini
- Rich Cunard
Jim Sturrock
SHRP 2

- SHRP 2 Pooled Fund Pre-solicitation notice for NDS: Charles Fay
Subcommittees

1. Joint Subcommittee on Traffic Simulation Models  List/Hadi
2. Crowd Flow Dynamics, Modeling and Management  Sarvi/Hoogendoorn
3. Connected Automated Vehicles  Mattingly
4. Research Problem Statements  Hadi
5. Paper Review  Ahn
6. Greenshields Prize & Awards  Leclercq
7. Mid-Year Meetings  Ahn
8. Outreach and Diversity  Hamdar
9. MFD Data Sets  Laval
10. Publication Impact Factors  Geroliminis/Gayah
Joint Traffic Simulation Subcommittee Report

Presented by

Mohammed Hadi, Ph.D., PE
Florida International University

Transportation System Simulation Manual Workshop
95th Transportation Research Board Annual Meeting

January, 10th 2016
SimSub Task Group

- Annual Workshop: Simulation Manual Workshop
- Research Needs and Resources Task Group
- Calibration, Verification and Validation Task Group
- Awards
  - Lifetime achievement award: Haris Koutsopoulos
  - Best paper award: The Structure of the Parameter Space of Car-Following Models by Peter Wagner and Ronald Nippold
- Liaison & Outreach
- SimSub Annual Report
- Mesoscopic Task Group
- Agent-Based Simulation
- SimCap Liaison
New Task Groups

- Simulation in Practice Group
- Simulation Concepts for Practitioners Group
Subcommittee Crowd Flow Dynamics, Modelling, and Management AHB45 (2)

Activity Report
(Serge Hoogendoorn, Majid Sarvi, Winnie Daamen)
Subcommittee’s Aims and Objectives:

1. Brings together scientists and practitioners from different disciplines working on crowd flow theory, modeling, operations, and management

2. Further theoretical development and understanding of crowd dynamics

3. Focus on application perspectives in flows and crowd management and design of crowd/pedestrian facilities
Subcommittee’s Activities in 2015:

1) TRB special call for papers
   22 papers received
   → Lectern session on Monday 11th (8AM-9:45AM), session 221

2) Subcommittee meeting on Tuesday 12th

3) Organisation of TGF15

4) Brainstorm on research issues
Subcommittee Future Agenda

• Special call-for-papers on crowds for TFT summer meeting
• White paper with list of critical issues
• Joint research agenda based on identified critical issues
• Monograph on crowd traffic flow theory
Connected Automated Vehicles

- Stephen Mattingly

Haizhong Wang, Danjue Chen, Steve Mattingly, Gabor Orosz and
Rob Bertini, Ahn Soyoung, Mark Brackstone

TRB Committee on Traffic Flow Theory and Characteristics (AHB45) Subcommittee on Traffic Flow Modeling for Connected and Automated Vehicles
Goal

- To create a working interest group to sustain the communication and collaboration across TFTC and other communities.
- To identify major challenges and research needs for the traffic flow research community.
Quick Statistics

- 3 hour and half session
- Panel discussion - over 30 attendees.
- Reached out to “many” and identified five excellent speakers and presentations
Five Extraordinary Speakers and Presentations
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Break Social and Breakout Discussions
Identified Challenges and Outcomes

- The *biggest challenge*: potential inconsistency in users, operators, and manufacturer goals.
- To connect the research community to broader communities, especially manufacturers -critical for data acquisition.
Future Research Needs

Data Collection and Analysis

- Changes in driver behavior
- CAV operational capabilities and constraints
- Interactions of drivers with CAV capabilities
- Benefits of CAV to consumers

CAV applications

- Impacts on corridor and network level operations under various market penetration rates
- Trajectory control and vehicle cooperation at freeway bottlenecks and traffic signals under multiple objectives (e.g., safety, environment, driver acceptance)
The Organizing Committee
Thank you and Questions!
Traffic Flow Theory
Research Problem Statements
Past Efforts

- SimSub Survey (about 50 participants) identified and prioritized 43 research issues in 2006
- Traffic flow theory survey in 2008
- Currently RNS has 8 statements uploaded in 2008
- RNS may have statements by other committees related to TFT and SimSub
- 2012 Research Need Workshop
Priority Areas Previously Identified

• Transportation System Simulation Manual
• Driver behaviors in response to advanced strategies (both existing and emerging)
• Collection of trajectory databases
• TFT/Simulation Models that deal with variations in driver behaviors under different congestion levels/ Congestion types/instability in flows
  • Produce model vehicle trajectories that better reflect driver behaviors (e.g., for emission/safety modeling)
Paper Review & Sessions

Special thanks to subcommittee members, authors and reviewers!

1,138 papers since 2009
Special Calls for Papers

- Crowd Dynamics: Empirical Analyses, Modeling, Simulation and Management
  - Organizers: Majid Sarvi, Serge Hoogendoorn, Winnie Daamen,
  - 20 papers received
  - 1 podium session

- Advances in modeling and traffic management for large-scale urban networks
  - Organizers: Nikolas Geroliminis, Vikash Gayah, Victor Knoop, Majid Sarvi
  - 18 papers received
  - 1 podium session
Special Calls for Papers

- **Calibration, Validation and Sensitivity analysis**
  - Organizers: Christine Buisson, Peter Wagner
  - 13 papers received
  - 1 podium session

- **Integrated Traffic Flow Models and Analysis for Connected Automated Vehicles**
  - Organizers: Haizhong Wang, Stephen Mattingly, Robert Bertini
  - 23 papers received
  - 1 podium session

- **Special Calls for 2017 Due in May 2016**
  - Topics?
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Dear members and friends of the TRB Committee on Traffic Flow Theory and Characteristics (AH4S):

We hope you will join us at the upcoming TRB Annual Meeting in Washington, DC January 19-22, 2016. For details, please use the TRB interactive program and enter “AH4S” to find our events:

1. **Committee Meeting:** All members and friends are welcome at our committee business meeting, Wednesday, January 13, 2016, 8:00 AM-12:00 PM, Marriott Marquis, Marqui Ballroom Salon 3 (M3).

2. **Draft Agenda:** Please review the agenda and let me know if you have anything to add or modify.

3. **Student Meeting:** AH4S(S): Please support the efforts of the Joint Subcommittee on Simulation by participating in our meeting on Monday, 7:30 PM-10:00 PM Marriott Marquis, Marqui Ballroom Salons 10 (M3).

4. **Traffic Flow Dynamics, Modelling and Management Subcommittee Meeting:** AH4SS(T): The traffic dynamics subcommittee will meet on Tuesday, 8:00 AM-12:00 PM, Marriott Marquis, Marqui Ballroom Salons 11 (M2).

5. **Traffic Modelling for Connected and Automated Vehicles (CAV):** The CAV subcommittee will meet on Monday, 5:30 PM-8:30 PM, Marriott Marquis, LeBraith Park (M2).

6. **Choosing Session:** This year we are sponsoring or co-sponsoring three Sunday Workshops and one doctoral student workshop:

   1. **Workshop A14: Toward Automation of Surface Transportation Networks: Opportunities and Challenges:** Sunday, 9:00 AM-12:00 PM, Convention Center, 1004A. Please help support our new subcommittee and research agenda with this engaging session.

   2. **Workshop A15: Transportation System Simulation:** Sunday, 10:00 AM-1:00 PM, Convention Center, 1002A. Join us for the annual Simulation workshop and get there early since there will be a big crowd.

7. **Doctoral Student Workshop A14:** Transportation Modelling: Sunday, 1:30 PM-5:30 PM, Convention Center, 145A.

8. **Poster Sessions:** We have six poster sessions this year:

   1. **Poster Session A:** Empirical Analysis, Modelling, Simulation, and Management: Monday, 8:00 AM-9:45 AM, Convention Center, 1004
   2. **Poster Session B:** Traffic Flow Theory and Characteristics: Monday, 10:45 AM-12:00 PM, Convention Center, 1002
   3. **Poster Session C:** Traffic Flow Theory and Characteristics: Tuesday, 8:00 AM-10:15 AM, Convention Center, 111
   4. **Poster Session D:** Traffic Flow Theory and Characteristics: Tuesday, 10:30 AM-12:30 PM, Convention Center, 111
   5. **Poster Session E:** Traffic Flow Theory and Characteristics: Tuesday, 8:00 AM-10:15 AM, Convention Center, 111
   6. **Poster Session F:** Traffic Flow Theory and Characteristics: Tuesday, 10:30 AM-12:30 PM, Convention Center, 111

Visit our website [TRB.org](http://www.trb.org) and “Like” us on Facebook [TRB Facebook](https://www.facebook.com/TRB1914).

Special thanks to all paper reviewers, call-for-papers organizers, paper review coordinators, subcommittee chairs, members and friends for the incredible job in putting this meeting together. Please feel free to [contact me](mailto:soojung.lee@uwm.edu) if you have any suggestions or questions. I look forward to seeing you in Washington. Best wishes,

Soojung (Lee) Ahn, University of Wisconsin-Madison
Chair, TRB Committee on Traffic Flow Theory and Characteristics
Workshops

**Sunday Workshops:** This year we are sponsoring or co-sponsoring three Sunday Workshops and one doctoral student workshop:

1. **Workshop 134 Toward Automation of Surface Transportation Networks:** Opportunities and Challenges: Sunday 9:00 AM-12:00 PM, Convention Center, 102A. Please help support our new subcommittee and research agenda with this engaging session.

2. **Workshop 181 Transportation System Simulation Manual:** Sunday 1:30 PM-4:30 PM, Convention Center, 102A. Join us for the annual SimSub workshop and get there early since there will be a big crowd.

3. **Doctoral Student Workshop 194 Transportation Modeling:** Sunday 1:30 PM-5:30 PM, Convention Center, 145A.
Lectern Sessions: We have six lectern sessions this year:

1. **221 Crowd Dynamics: Empirical Analyses, Modeling, Simulation, and Management**: Monday 8:00 AM-9:45 AM, Convention Center, 103B
2. **278 Calibration Validation and Sensitivity Analysis**: Monday 10:15 AM-12:00 PM, Convention Center, 101
3. **414 Integrated Traffic Flow Models and Analysis for Connected Automated Vehicles**: Monday 3:45 PM-5:30 PM, Convention Center, 101
4. **620 Advances in Modeling and Traffic Management for Large-Scale Urban Networks**: Tuesday 1:30 PM-3:15 PM, Convention Center, Salon C
5. **694 Macroscopic Features of Traffic Flow**: Tuesday 3:45 PM-5:30 PM, Convention Center, Salon C
6. **844 Microscopic Traffic Flow Modeling**: Wednesday 2:30 PM-4:00 PM, Convention Center, 101

Poster Sessions: We are sponsoring three poster sessions—please attend and meet the authors:

1. **536 Traffic Flow Theory and Characteristics, Part 1**: Tuesday 8:30 AM-10:15 AM, Convention Center, Hall E
2. **537 Traffic Flow Theory and Characteristics, Part 2**: Tuesday 8:30 AM-10:15 AM, Convention Center, Hall E
3. **589 Traffic Flow Theory and Characteristics, Part 3**: Tuesday 10:45 AM-12:30 PM, Convention Center, Hall E
Awards
Awards

- Congratulations Hani!
- 2016 Thomas B. Deen Distinguished Lectureship Award
- “Micro Models and Mega Data: Taming Complexity for Deep Insight and Robust Decisions”
TRB Wide Awards

D. Grant Mickle Award
- Established 1976
- Outstanding paper published in the field of operation, safety, and maintenance of transportation facilities.
- Honors fifth executive director, later 33rd Executive Committee Chair

Fred Burggraf Award
- Established 1966
- Stimulate and encourage young researchers
- Recognition of excellence in transportation research by researchers 35 years of age or younger whose papers have been published under the sponsorship of any Division A Standing Group
- Accompanied by a cash prize
- Honors TRB director from 1951-1964

No paper was recommended in 2015.

For next year, please mention on the first page of your paper if you are eligible to this award.
Cunard Award for 2015

2015 Best 1st Young Author Paper in the area of Operations:

- 15-4588 - On Traffic Relaxation, Anticipation and Hysteresis
- Hui Deng, University of California, Davis (huideng@ucdavis.edu)
- H. Michael Zhang (corresponding), University of California, Davis (hmzhang@ucdavis.edu)
Real-Time Travel Time Prediction Framework for Departure Time and Route Advice

By Calvert, S.C., TNO, Snelder, M., TNO, Bakri, T., TNO, Heijligers, B., TNO, Knoop, V., TU Delft

This paper proposes a real time travel time prediction framework designed for large urban area including both arterial and urban roads. This framework makes it possible to test a wide variety of prediction models based either on theoretical or data-driven approaches. The results are demonstrated in a large test case corresponding to the Amsterdam Practical Trial. Data-driven approaches were then favor because their are easier to calibrate and require less computations. For short-term prediction, it appears that the simplest data driven approach (naive approach) performs the best. For larger-time window, a refined method (historic median prediction) provides the more accurate results. In most cases, the average absolute relative error is below 20%. The main contributions of this paper are (i) the formulation of the global framework and (ii) the extensive test of different methods on a large and heterogeneous operational test cases. The operational feedbacks from this study provide a good state of the art of the performance of data-driven methods in a mixed context and pave the way of further methodological developments.
Eligibility of Papers for Awards (2015)

2016 results

Only papers submitted to TRR are considered

2014 results

2015 results

GreenShield
Mickle (O)
Cunard (O)
Burggraf

Ranking for publication
Some insights

- Lots of papers submitted for publication in TRR have a young author as first author.
- Only one paper seems eligible to the Burggraf award (hard to check in practice).
- The Greenshields (data) requirement is not restrictive this year. Most of good papers include data analysis!

We are currently working on the 2016 award season!
The 2016 greenshield prize will be announced during TFT summer meeting in Sydney!
Mid-Year Meetings

- 2007 ISTTT London (in pub)
- 2008 Greenshields Symposium, Woods Hole
- 2009 ISTTT Hong Kong (lunch table)
- 2010 Does Traffic Data Support Traffic Models? Annecy, France
- 2011 ISTTT Berkeley (one hour w/SimSub)
- 2012 Joint Summer Meeting with HCQS Committee, June 19-22, Fort Lauderdale, Florida
- 2013 ISTTT, July 17-19, Noordwijk, the Netherlands
- 2014 Portland, Oregon, USA, Symposium Celebrating 50 Years of Traffic Flow Theory
- 2015 ISTTT Kobe
- 2016 Sydney, Australia
- 2017 ISTTT Chicago
- 2018 TBA Woods Hole or Irvine?
2016 TFT Summer meeting

The next TRB Traffic Flow Theory and Characteristics Committee (TFTC) summer meeting will be held in Sydney, Australia, 2-3 July, 2016. For more information, please check out the website: [http://www.tft2016.com](http://www.tft2016.com/).

The symposium and summer meeting will be held in conjunction with the Dynamic Traffic Assignment Symposium (DTA2016) [http://www.dta2016.org](http://www.dta2016.org/) which will also be held in Sydney, 28-30 June, 2016. The joint events create a significant opportunity for transportation researchers and practitioners to interact and identify research findings that would benefit the existing analysis and modeling procedures and to
Traffic Flow Theory and Characteristics Committee
(AHB45)
2016 Summer Meeting

Sydney, Australia
July 2-3, 2016
Sydney, Australia  
July 2-3, 2016


Building on the success of the previous TRB Traffic Flow Theory and Characteristics Committee (TFTC) summer meetings held in Portland, Oregon (2014), Fort Lauderdale, Florida (2012), Annecy, France (2010), and the Greenshields Symposium in Woods Hole, Massachusetts (2008), the next TFTC committee summer meeting will be held in Sydney, Australia, 2-3 July, 2016.

The symposium and summer meeting will be held in conjunction with the Dynamic Traffic Assignment Symposium (DTA2016) which will also be held in Sydney, 28-30 June, 2016. The joint events create a significant opportunity for transportation researchers and practitioners to interact and identify research findings that would benefit the existing analysis and modeling procedures and to identify research needs related to traffic flow theory and dynamic traffic assignment.

IMPORTANT DATES

15/02/2016 - Abstract submission deadline
15/03/2016 - Notification of abstract acceptance/rejection
15/05/2016 - Full paper submission deadline (optional)
31/05/2016 - Early bird registration deadline
Local Organizing and Scientific Committee

Majid Sarvi – The University of Melbourne
Meead Saberi – Monash University
Mohsen Ramezani – Monash University
Inhi Kim – Monash University
Vinayak Dixit – University of New South Wales
Travis Waller – University of New South Wales
Emily Moylan – University of New South Wales
Lauren Gardner – University of New South Wales
Taha H. Rashidi – University of New South Wales
Michael Bell – The University of Sydney
Mark Hickman – The University of Queensland
Jiwon Kim – The University of Queensland
Hai Vu – Swinburne University of Technology
Xiaobo Qu – Griffith University
Hussein Dia – Swinburne University of Technology
Zuduo Zheng – Queensland University of Technology
Russell Thompson – The University of Melbourne
Sara Moridpour – RMIT
International Scientific Advisory Committee

sorted alphabetically (all current committee members)

Soyoung Ahn, Chair – University of Wisconsin, Madison, USA
Constantinos Antoniou – National Technical University of Athens (NTUA), Greece
Robert Bertini - California Polytechnic State University, San Luis Obispo, USA
Christine Buisson – LICIT (ENTPE/IFSTTAR), France
Winnie Daamen – TU Delft, The Netherlands
Jing Dong – Iowa State University, USA
Nathan Gartner – University of Massachusetts, Lowell, USA
Vikash Gayah – Pennsylvania State University, USA
Nikolas Geroliminis – Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland
Eric Gonzales – University of Massachusetts, Amherst, USA
Mohammed Hadi – Florida International University, USA
Samer Hamdar – George Washington University, USA
Serge Hoogendoorn – TU Delft, The Netherlands
Victor Knoop – TU Delft, The Netherlands
Ludovic Leclercq – Universite de Lyon, France
Jorge Laval – Georgia Institute of Technology, USA
George List – North Carolina State University, USA
Hans van Lint – TU Delft, The Netherlands
Hani Mahmassani – Northwestern University, USA
Monica Menendez – Swiss Federal Institute of Technology (ETH), Switzerland
Marco Nie – Northwestern University, USA
Yanfeng Ouyang – University of Illinois, Urbana Champaign, USA
Vincenzo Punzo – University of Napoli, Italy
Abstracts (maximum 400 words) will be reviewed by members of the local organizing and scientific committee. Authors of accepted abstracts will be invited to submit a full paper (optional). Full papers will not be reviewed for the conference, but will have the opportunity to be reviewed for publication consideration in the Transportation Research Part C: Emerging Technologies in a fast-track process reviewed by members of the international scientific advisory committee.

1. Go to the Microsoft Conference Management System.
2. Login with an existing username and password from a previous conference, or create a new login.
3. Create a new submission by uploading your abstract as a PDF file (maximum 400 words, use template above)

If you have any question, please contact us at info@tft2016.com.

Registration

Registration information will be announced soon.

Visa Information
Melbourne Pre/Post conference

• Crowd dynamic workshop (Serge, Armin, industry, etc.) as part of subcommittee activities
• Would like to visit, present and participate let us know
Summer Meeting Discussion

- 2018 TBA
  - Woods Hole, San Luis Obispo, or Irvine
- Classic Paper Retreat
  - Participants: Christine Buisson, Nathan Gartner, Mohammed Hadi, Hani Mahmassani, Michael Zhang
  - Potential format: Each participant presents a selected paper and lead the discussion.
Outreach and Diversity

- Newsletter
- YouTube Channel
- Work with other subcommittees/committees:
  - Joint Simulation Sub-Committee: AHB45(1)
  - Traffic Flow Modeling for Connected and Automated Vehicles: AHB45(3)
  - Midyear Meeting 2016
  - Webinars (ISTTT21 Webinars)
  - Intelligent Transportation Systems Committee: AHB15
  - Vehicle Highway Automation Committee: AHB30.
- Workshop 134: outreach to private and public entities (USDOT/FHWA, DDOT, Verizon, VW, Toyota, Leidos, Battelle, Daimler, Mitre ...etc.)
- TFT Webpage and Facebook Page
Newsletters

- Launched July 2013 (30 issues threshold)
  - (1) January 2016
  - 12 January 2015 issue
  - 12 issues in 2014
  - 5 issues in 2013
- Archived at: [http://tftcnews.blogspot.com/](http://tftcnews.blogspot.com/)
- Contact Samer Hamdar
  hamdar@gwu.edu
- What do you want to see?
- Ideas/Suggestions/Input

Welcome!
Added coordination needed
YouTube channel

AHB45 YouTube Channel to be redesigned and re-launched (2016/2017)
(Established in 2014 with the help of Dr. Sandeep Mutigonda)

Dr. Alireza Talebpour
Reporter

Ms. Zhijie (Sasha) Dong
News Media Coordinator

Mr. Justin P. Schorr
IT Support

Copy-right issues: already received warning from YouTube
Youtube Channel

- 23 subscribers
- 6 Videos
- Found at: https://www.youtube.com/user/AHB45/feed
- Further work needed:
  - 4 Sections:
    - Interviews: Alireza Talebpour
    - Webinars (from Webinar Series): Li Xiaopeng (previously, Meead Sabri)
    - News Videos (News Media in Newsletter since March 2014): Sasha Dhong
    - Research and Educational Videos: Samer Hamdar and Hans Van Lint

Additional ideas & suggestions welcomed
TRB 134 Workshop

- Coordination with newly formed “Traffic Flow Modeling for Connected and Automated Vehicles” Subcommittee:
  - Assistance in AVS2015 Symposium

**Workshop 134**

*Toward Automation of Surface Transportation Networks: Opportunities and Challenges*

Sunday 9:00 AM- 12:00 PM
Convention Center, 102A
Workshop

Stephen Mattingly, University of Texas, Arlington, presiding

**Sponsored by:**
Standing Committee on Traffic Flow Theory and Characteristics (AHB45)

*Connected and automated vehicles have been of interest in the past few years, with major public and private initiatives exploring the roles of the technologies for the future of the highway system. However, traffic safety and congestion implications of such technologies are not well understood. This workshop aims to present the latest related developments and opportunities and to detail the traffic-related research challenges that remain unanswered.*
Welcome to the home page of the TRB Committee on Traffic Flow Theory and Characteristics. This voluntary TRB committee is concerned with the development, validation, and dissemination of theoretical, experimental, and applied research on traffic flow theory and traffic flow characteristics and the determination of the relationship of traffic flow theory and traffic flow characteristics to the planning, design and operation of transportation systems.

Subcommittees

Joint Simulation Subcommittee (SimSub)

Jointly sponsor the TRB Joint Simulation Subcommittee (SimSub), chaired by George Litt (North Carolina State University). SimSub is the focal point for coordinating advancements in traffic simulation which crosses multiple committee boundaries. You can volunteer in one of SimSub’s task groups: Annual Workshop, Liaison and Outreach, Newsletter: Research Needs and Resources; Simulation Calibration; Verification and Validation; Mesoscopic Simulation; Safety Modeling and Simulation; or Agent-Based Simulation.

Crowd Flow Dynamics, Modeling and Management Subcommittee

Consider getting involved in this subcommittee (AHB45/2), which is chaired by Serre Hoogendoorn (Tu Delft) and Majid Servi (Monash University). Follow our Facebook page, and join us for our annual workshop and committee meeting in January at the TRB Annual Meeting.

TRB Publications:

Since 1963 the Committee on Traffic Flow Theory & Characteristics has contributed approximately 619 papers to 66 issues of the Transportation Research Record (previously Highway Research Record). These papers have been cited more than 13,000 times according to Google Scholar (thanks to S. Kwan). We invite your comments on these papers -- how have they influenced research or practice? Do you cite them? The International Symposium on Traffic and Transportation Theory (ISTTT) has produced 645 papers since 1959, that have been cited more than 14,000 times according to Google Scholar (thanks to V. Cunha).

Free Traffic Flow Webinars: Since 2010 we have hosted more than 40 free Traffic Flow Theory and Characteristics Webinars. From 2010-2011, this was done in partnership with the TrafficLab at Georgia Tech. You can join the Traffic Flow Webinar Google Group to make sure you are notified and also be sure to follow us on Facebook. If you have a topic to suggest or you would like to present a webinar, please contact us.

2016 TRB Annual Meeting: Click here for a quick summary of our meetings, sessions, and workshops that will be held.

http://tft.ceng.calpoly.edu/index.htm

Facebook Page (Meead Sabri)

https://www.facebook.com/AHB45
Outreach and Diversity

- Summary: many actions/tasks done but many still to do:
  - data repository (MFD Initiative – Jorge Laval)
  - outreach to additional entities
  - liaison in every continent
  - activities targeted to students ...etc.

- Thanks to: Alireza Talebpour, Sasha Dong, Justin Schorr, Jing Dong, Vikash Gayah, Meead Saberi, Ethan Xuan, Stephen Mattingly and Monica Menendez, Li Xiaopeng
Committee Website

- [http://tft.ceng.calpoly.edu/](http://tft.ceng.calpoly.edu/)
- Anyone can contribute items
- Revised 2001 Monograph
- 1964 and 1975 Monographs
- Greenshields Symposium 2008 TR Circular
- Symposium Pages
- Greenshields Prize page
- Historic Papers
- Meeting Materials
- Volunteer?
Young Members Council

- Eric Gonzales
Webinars

- Featuring ISTTT 21 papers
  - Aim to reach out to global audiences who could not attend this conference.
- 26 Speakers from the world US 9, Netherlands 3, UK 3, Hong Kong 2, Singapore 2, Switzerland 2, Australia 1, China 1, France 1, Ireland 1, Israel 1
- Schedule: Friday morning or earlier afternoon, DC time; 3-4 presentations a month.
  - 10 webinars completed and 16 remaining
  - Average attendees for the completed webinars: 18
  - Slides and videos may be available at https://docs.google.com/spreadsheets/d/17kLaXInElnEsa-7ZDmmSC1oO0dRFU6ZmeHNxoh04-A/edit#gid=882784935

Subcommittee Chair: Jorge Laval (Georgia Institute of Technology); Sponsor: Jack Haddad (Israel Institute of Technology); Organizer: Xiaopeng Li (University of South Florida)
Mission statement: to compile empirical MFD data from as many cities around the world as possible, given that currently there are very few empirical MFDs documented in the literature.

Outcomes:
- A paper compiling all the data, with as many co-authors as data contributors participate
- An online repository to make the data available (after obtaining proper permissions)
- A call for papers using the data for the 2017 TRB annual meeting
## 22 data contributors

<table>
<thead>
<tr>
<th>Contributor</th>
<th>Institution</th>
<th>Type of data</th>
<th>Location of data</th>
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<tr>
<td>Henk van Zuylen</td>
<td>TU Delft</td>
<td>taxi GPS and loop detector</td>
<td>Changsha (PR China)</td>
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<tr>
<td>Hesham Rakha</td>
<td>Virginia Tech</td>
<td>loop detector</td>
<td>Washington DC</td>
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<tr>
<td>Serge Hoogendoorn</td>
<td>TU Delft</td>
<td>loop detector</td>
<td>arterials near A10 motorwa</td>
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<tr>
<td>Nicolas Chiabaut</td>
<td>University of Lyon</td>
<td>Bluetooth and loop detector</td>
<td>Lyon</td>
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<tr>
<td>Ludovic Leclercq</td>
<td>University of Lyon</td>
<td>loop detector</td>
<td>Lyon</td>
</tr>
<tr>
<td>Samer Hamdar</td>
<td>The George Washington University</td>
<td>loop detector</td>
<td>Korea and Washington DC</td>
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<tr>
<td>Jack Haddad</td>
<td>Technion University</td>
<td>Bluetooth</td>
<td>Tel Aviv</td>
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<td>Meng Li</td>
<td>Shinghua University</td>
<td>loop detector</td>
<td>Beijing</td>
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<td>Mohsen Ramezani</td>
<td>Monash University</td>
<td>loop detector</td>
<td>Melbourne</td>
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<tr>
<td>Masao Kuwahara</td>
<td>Tohoku University</td>
<td>loop detector</td>
<td>Japan</td>
</tr>
<tr>
<td>Alessandra Pascale</td>
<td>IBM</td>
<td>loop detector</td>
<td>London and Dublin</td>
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<td>Victor Knoop</td>
<td>TU Delft</td>
<td>loop detector and travel times</td>
<td>The Hague dataset</td>
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<tr>
<td>Nikolas Geroliminis</td>
<td>EPFL</td>
<td>loop detector and bus GPS data</td>
<td>Geneva</td>
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<tr>
<td>Evangelos Mitsakis</td>
<td>Hellenic Institute of Transport</td>
<td>FCD data and loop detector</td>
<td>Athens</td>
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<tr>
<td>Weihua Gu</td>
<td>Hong Kong Polytechnic University</td>
<td>loop, ultrasonic, and infrared detectors</td>
<td>Qingdao, China</td>
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<tr>
<td>Keshuang Tang</td>
<td>Tongji University</td>
<td>loop, ultrasonic, and infrared detectors</td>
<td>Qingdao, China</td>
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<tr>
<td>Robert L. Bertini</td>
<td>Calpoly</td>
<td>loop detector</td>
<td>Oregon (Portal) or California</td>
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<tr>
<td>Christine Buisson</td>
<td>University of Lyon</td>
<td>loop detector</td>
<td>Toulouse</td>
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<td>Jiwon Kim</td>
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<td>Brisbane</td>
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<tr>
<td>Kentaro Wada</td>
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<td>loop detector</td>
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<tr>
<td>Takashi Akamatsu</td>
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<td>loop detector</td>
<td>Sendai region</td>
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<tr>
<td>Pengfei Wang</td>
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<td>loop detector</td>
<td>Sendai region</td>
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10 volunteers

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<th>Institution</th>
<th>Assistance with</th>
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<tr>
<td>Haizhong Wang</td>
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<tr>
<td>Meead Saberi</td>
<td>Monash University</td>
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<tr>
<td>Vikash Gayah</td>
<td>Penn State</td>
<td>Call for paper, archiving and data processing</td>
</tr>
<tr>
<td>Eric Gonzales</td>
<td>Umass</td>
<td>Please say that again</td>
</tr>
<tr>
<td>Jie Sun</td>
<td>University of Minnesota</td>
<td>Data processing and archiving</td>
</tr>
<tr>
<td>Vinayak Dixit</td>
<td>University of South Wales</td>
<td>Data processing and analysis</td>
</tr>
<tr>
<td>Rama Chilukuri</td>
<td>Georgia Tech</td>
<td>Data processing</td>
</tr>
<tr>
<td>Ali Zockaie</td>
<td>Michigan state University</td>
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</tr>
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<td>Wei, Heng</td>
<td>The University of Cincinnati</td>
<td>Data processing and archiving</td>
</tr>
<tr>
<td>Bernat Goni Ros</td>
<td>TU Delft</td>
<td>Data processing and archiving</td>
</tr>
</tbody>
</table>
Update

- No datasets available yet
- Please encourage data contributors to follow up
AN ANALYSIS OF CITATIONS

Prof. Nikolas Geroliminis
Urban Transport Systems Laboratory

Washington DC, January 13th, 2016
A quick survey

• Can we evaluate academic excellence and performance based on a few simple indices?
• Is journal impact factor representative of quality of journals?
• Are all papers in high IF journals of top quality?
A quick survey

• How many in this room know their own number of citations?
• Same question asked 10 years ago.

• Interesting article to read in Wikipedia about journal impact factors
Data description

• Utilize Scopus data
• Select 5 journals related to TFT
  – TR part B, TR part C, TRR, T Science, TRR TFT
• Extract individual paper citations since 2010
• Investigate variability of citations across journals
• Investigate individual citations for a few established colleagues with >100 journal papers
% of citations received by the X% top cited papers
(papers published in 2010)
How higher would the impact factor be if only top X% cited papers are considered (normalized)
Average citations per paper for the top X% cited papers of 2010

- TR_C
- TRR
- TR_B
- TFT
- TScience
Individual citation analysis

- 3 authors chosen with very significant collaborations in transport research (not close collaborators):
  - >2500 citations in Scopus
  - >100 journal papers
  - Heavily involved in TRB

\[ y = 138.66e^{0.0973x} \]
\[ R^2 = 0.4352 \]
Individual citation analysis

• Authors 1 and 2
  Approximately 50% TRR
  In their 20 most cited papers, only 25% TRR
  In their h-index about 30% TRR

• Author 3
  1/3 TRR,
  1/3 TR part B,
  1/3 other
  In his h-index only 9% TRR, 50% TR part B
Conclusions

• TFT TRR is receiving 50% more citations (on average) than TRR
• TFT has less heterogeneity in the citations across papers compared to TRR
• Total TFT citations are still less than the journals in the field with the highest impact factor
• Papers in TRR receive much less citations than other papers in other journals (for the same authors)
Suggestions

• Stronger review process
  – 2 rounds of review for TRR
  – Separate the process for presentation and publication of papers
  – Include pre-screening, reject low quality papers without full review by the paper coordinators (same policy in many top journals)
• Stricter acceptance rules (not based on a 20% rate, but on quality)
• Split TRR in areas (TRR_A, TRR_B, TRR_C etc)
• Accelerate publication process (make papers available online with DOI)
• Create a latex template for TRR
Special Report on TFT

- Hani Mahmassani
Liaison with Other Committees

- Highway Capacity Quality of Service Committee (AHB40)
  J. Sturrock/M. Hadi

- Task Force on System Simulations (AHB80T)
  R. Bertini/J. Sturrock/R. Cunnard
International Liaison

- ERC funding
  - L. Leclercq

- NEARCTIS
  - W. Daamen

- Chinese Driving Behaviors
  - H. Wei
A holistic approach of mobility

\[ f = \min_{u_{12}(t), u_{21}(t)} \int_{\tau_0}^{\tau_f} \left[ n_1(t) + n_2(t) \right] dt + \sum_{k=0}^{N} \sum_{i=1}^{L} x_i(k) \]

+ \frac{q_{23}(t)}{13(t) + q_{21}(t)} u_{13}(t). M_{21}(t) + q_{11}(t) + \hat{q}_{231}(t) + \hat{q}_{31}(t) - \dot{M}_{11}(t) \]

\[ \ddot{q}_{123}(t) + \frac{q_{21}(t)}{u_{12}(t) - \dot{M}_{12}(t)} q_{13}(t) + q_{131}(t) + q_{132}(t) - \min(M_{13}(t), C_{or,1}(t)) \]

\[ \ddot{q}_{213}(t) + \frac{\dot{q}_{321}(t)}{u_{12}(t) - \dot{M}_{21}(t)} q_{13}(t) + q_{131}(t) + q_{132}(t) - \min(M_{23}(t), C_{or,1}(t)) \]

\[ \frac{d}{dt} \frac{d n_{23}(t)}{d t} = \frac{q_{123}(t) - q_{123}(t)}{u_{12}(t) - \dot{M}_{23}(t)} q_{13}(t) + q_{131}(t) + q_{132}(t) - \min(M_{23}(t), C_{or,1}(t)) \]

\[ C_{or,1}(t) = (n_{max} - n_{min}(k))/T_k \]

\[ u_{\min} \leq u_{or,1}(k), u_{or,2}(k) \leq u_{\max} \]

\[ n_{11}(t) + n_{12}(t) + n_{13}(t) \]

\[ n_{21}(t) + n_{22}(t) + n_{23}(t) \]

ERC STARTING GRANT METAΦΕΡΩ
= (Ancient Greek) transport or transfer

Urban Transport Systems Laboratory

LUTS

1000 bus data in Geneva

20000 taxi data in Shenzhen
A “System of Systems” Approach

MOBILITY MANAGEMENT

- Car Sharing
- Parking
- Urban Space Allocation
- Hierarchical Signal Control
- On demand Public Transport

- FIXED LIGHTS
- SMART LIGHTS

Field test (Geneva)
Detailed Simulation (SF)

8:00
9:30
11:00
12:30
14:00

MOBILITY MANAGEMENT
PATTERNS
BIG DATA
CONTROL
ERC Program and its Objectives

Mart Saarma

Institute of Biotechnology, Biocentrum Helsinki, University of Helsinki
Vice President of the ERC

ERC Information Day in Lyon, March 5, 2015
What is ERC?

The ERC supports excellence in frontier research through a bottom-up, individual-based, pan-European competition

**Budget:** € 13 billion (2014-2020) - 1.9 billion €/year
€ 7.5 billion (2007-2013) - 1.1 billion €/year

- **Scientific governance:** independent Scientific Council with 22 members including the ERC President; full authority over funding strategy
- **Support by the ERC Executive Agency** (autonomous)
- **Excellence as the only criterion**

- **Support for the individual scientist** – no networks!
- **Global peer-review**
- **No predetermined subjects** (bottom-up)
- **Support of frontier research in all fields of science and humanities**
ERC Grant Schemes

Starting Grants
- starters (2-7 years after PhD)
- up to €2.0 Mio
- for 5 years

Consolidator Grants
- consolidators (7-12 years after PhD)
- up to €2.75 Mio
- for 5 years

Advanced Grants
- track-record of significant research achievements in the last 10 years
- up to €3.5 Mio
- for 5 years

Proof-of-Concept
- bridging gap between research - earliest stage of marketable innovation
- up to €150,000 for ERC grant holders
Creative Freedom to Individual Grantee

ERC offers independence, recognition & visibility

• to work on a research topic of own choice, with a team of own choice
• to gain true financial autonomy for 5 years
• to negotiate with the host institution the best conditions of work
• to attract top team members (EU and non-EU) and collaborators
• to move with the grant to any place in Europe if necessary (portability of grants)
• to attract additional funding and gain recognition; ERC is a quality label
Attracting Researchers to Europe

Nationality of ERC project teams (PIs not included)
Analysis of 995 Starting and Advanced Grants

53% of non-ERA team members "attracted" to Europe with the ERC grant (10% of all team members)

EU: 67%
Assoc. Countries: 12%
non-ERA: 18%
unknown: 3%

Most non-ERA from China, US, India, and Russia
Collaborating with ERC PI (non EU people)

• The ERC is fostering scientific cooperation between the European Union and leading research funding agencies outside Europe. Six international arrangements have been implemented with:
  • National Science Foundation of the United States;
  • Ministry of Science, ICT and Future Planning of the Republic of Korea;
  • Ministry of Science, Technology and Productive Innovation of the Republic of Argentina;
  • Society for the Promotion of Science of Japan;
  • National Natural Science Foundation of the People's Republic of China;
  • the National Research Foundation of the Republic of South Africa.

• The foreign scientist visits the ERC project and not vice versa, the resulting costs are shared between the non-EU based research agency and the ERC project (http://erc.europa.eu/implementing-arrangements)
TRAMAN21

(TRAffic MANagement for the 21st Century)

ERC Advanced Investigator Grant

Prof. Markos Papageorgiou
Dynamic Systems and Simulation Laboratory
Technical University of Crete
– **Started** in March 2013 (through 2017)
– **Scope:** Motorway traffic of the future
– **Motivation:** A number of vehicle-centric VACS (vehicle automation and communication systems) have been introduced or are being developed
  • Implications for the traffic flow?
  • Novel opportunities for improved traffic flow?
TRAMAN21 work:

- Overview of emerging VACS
- New traffic flow modelling approaches (microscopic and macroscopic) in presence of VACS
- Traffic control exploiting the offered new automation and connectivity capabilities (at vehicle, local, link, network-wide levels)
- Field trial: Speed harmonisation and control with conventional VSL

www.traman21.tuc.gr
A multiscale and multimodal traffic modeling approach for sustainable management of urban mobility

Magnum.ifsttar.fr - @erc_magnum

An ERC Consolidator research program (1.9 M€)
Methodology for traffic modeling

- Decision models
- Link traffic dynamics
- Network traffic dynamics
- Advanced mathematical methods
- New modelling concept
- Scientific lock
- Scaling
- Aggregated traffic dynamics
- Model validation using next generation of traffic data

Weak point

- Sensitivity analysis & Massive behavioral data (Serious Game)

High resolution local consistency

Low resolution global consistency
MAGnUM in a nutshell

Task 1
Consistent set of dynamic, multiscale and multimodal urban traffic models

Task 2
New generation of efficient and green traffic management strategies

Modeling

Applications

MAGnUM in a nutshell
A better understanding of how individual decisions impact the global network performance in order to rethink the management of people mobility
Short Introduction to ERC AdG Programme

Unraveling Urban Pedestrian and Bicycle Flows
Increasing societal urgency

• Walking and cycling become increasingly important for cities due to different societal trends (re-urbanisation, generation Y, image of bike, e-bikes, ageing society, etc.)

• Events where large crowds gather are (more) frequent (sports-events, festivals, religious gatherings, spontaneous events, e.g. Facebook)

• Public transport stations become more and more crowded, managing crowds during reconstruction is a challenge

• Pedestrian level of service are at stake!
unrAvelLing sLow modE travelinG and tRaffic: with innOvative data to a new transportation and traffic theory for pedestrians and bicycles”

• 2,9 million Euro program with a **focus on developing theory** (from an application oriented perspective) sponsored by the ERC and AMS
• Relevant elements of the project:
  • Development of components for “living” data & simulation laboratory building on two decades of experience in pedestrian monitoring, theory and simulation
  • Outreach to cities by means of “solution-oriented” projects (“the AMS” part), e.g. event planning framework, design and crowd management strategies, etc.

*) *Amsterdam Institute of Advanced Metropolitan Solutions*
Active Mode UML

Data collection and fusion toolbox

Social-media data analytics

AM-UML app

Simulation platform

Transportation & Traffic Theory for Active Modes in Cities

Walking and Cycling Behaviour

Route Choice and Activity Scheduling Theory

Traffic Flow Operations

Factors determining route choice

Network Knowledge Acquisition (learning)

Models

Insights

Data

Engineering Applications

Planning and design guidelines

Organisation of large-scale events

Tools

Impacts
NEARCTIS

- Network of Excellence for Advanced Road Cooperative Traffic management in the Information Society
- Network of Excellence
- Financed by European Union 7th Framework Programme
- 2008-2013
NEARCTIS – full partners

TU Delft
Delft University of Technology

DLR
Germany

EPFL, Switzerland

IFSTTAR
Europe Recherche Transport

IFSTTAR, France

Imperial College London

Technical University of Crete

University of Southampton

University College London
ECTRI – thematic group

- Follow up: ECTRI thematic group on Traffic Management
- European Conference of Transport Research Institutes, [www.ectri.org](http://www.ectri.org)
- Objectives ECTRI
  - Promoting transport research
  - Providing independent, advice to decision makers
  - Incorporating and represent European transport research institutes and universities
ECTRI – TG TM

- Starting data 01/01/2016
- Extended partnership
  - 8 NEARCTIS partners
  - 12 additional organizations

Austrian Institute of Technology (AIT)  
Austria

Hellenic Institute of Transport (HIT)  
Greece

Technical University of Madrid (UPM)  
Spain

Federal Highway Research Institute (BASl)  
Germany

Transport Research Laboratory (TRL)  
United Kingdom

University of Valencia (UVEG)  
Spain

University of Deusto  
Spain

Newcastle University (NEW)  
United Kingdom

Vilnius Gediminas Technical University (VGTU)  
Lithuania

Fraunhofer (FhG)  
Germany

University of Zilina (UNIZA)  
Slovakia

Swedish National Road and Transport Research Institute (VTI)  
Sweden
ECTRI – TG TM core group

- Chair: Pierre Yves Gilliéron (EPFL)
- Wolfgang Ponweiser (AIT)
  - Objective 1: Define research topics
- Juliette Renaud (IFSTTAR)
  - Objective 2: Increase participation in EU projects
- Winnie Daamen (DUT)
  - Objective 3: Provide a platform for networking and scientific exchange
ECTRI – TG TM activities

- Developing a common Research Agenda in Cooperative Traffic Control and Management
- Compiling a set of leading case studies in Europe that can be used to test new cooperative TM
- Increasing cooperation in H2020 projects
- Generating a Common Database of shareable Resources (software, data, case studies etc.)
- Drawing up the education and training options and requirements in cooperative TM
- Delivering effective Training and Research Exchanges including 3-day training schools and mobility program for young researchers
Meeting in Brussels
- 27-01-2016

8th Young Researchers Seminar 2017
- May 16-18, 2017, Cologne, Germany
- Hosted by the German Aerospace Center (DLR)
- Also open to US young researchers and tutors
- June 30, 2016: Submission of abstracts
Preliminary Findings of Chinese Driving Behaviors and Implications for Modeling

Heng Wei (魏 恒), PhD, PE
Professor and Director, ART-Engines Transportation Research Lab

Jianjun Shi (石建军)
Professor, Beijing University of Technology, China

Xuesong Wang (王雪松), PhD
Professor, Tongji University of Technology, China
Breif Background

- China has a “relatively new” driving culture (as Peter Hessler points out in his excellent book *Country Driving*) and things are fairly chaotic as viewed from a someone used to driving in the US,
- China has very strong “defensive and offensive” driving culture and those two factors feed on each other. The strong offense requires a strong defense, this driving behavior is rooted in a more general cultural phenomenon of aggressiveness (or “competitive” behavior).
Problem Identification

Psychological State: Impatient + Rash – 急躁

Habitually Aggressive Behavior: Poised to Grab Roadway or Cut In – 习惯性冒进抢道

- Aggressively leaving lane to get ahead (偏道抢道)
- Forced lane change (强行换道)
- Randomly change lanes with no purpose (盲目换道)
- Driving a long ride line or crossing line (骑线而行)
- Driving in wrong way or in the opposite way (逆流而上)
- Use emergency or shoulder lane to overtake (滥用路肩)
- Large lateral movement (横移过大)
- Follow too closely with small spacing (紧跟前车)
- Interruption of motorized and non-motorized vehicles, pedestrian, at intersections (交叉路口机动车、非机动车与行人无规则干扰)
- Capacity Reduction, stop-and-go delay increasing, accident risk increasing (通行能力下降，停车延误增加，安全隐患增加)
Photos of Exemplary Problematic Driver Behaviors

**Aggressively leaving lane to get ahead or overtake (偏道抢道)**

**Forced lane change (强行换道)**

**Driving a long ride line or crossing line (骑线而行)**

**Driving in wrong way or in the opposite way (逆流而上)**

<table>
<thead>
<tr>
<th>Roadway Type</th>
<th># LC</th>
<th>km</th>
<th># LC/KM</th>
<th>#LC/Hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express</td>
<td>188</td>
<td>272.46</td>
<td>0.690</td>
<td>39.9</td>
</tr>
<tr>
<td>Urban Arterial</td>
<td>70</td>
<td>85.37</td>
<td>0.820</td>
<td>-</td>
</tr>
<tr>
<td>Freeway</td>
<td>25</td>
<td>78.86</td>
<td>0.317</td>
<td>29.9</td>
</tr>
<tr>
<td>Rural Highway</td>
<td>14</td>
<td>23.14</td>
<td>0.605</td>
<td>-</td>
</tr>
</tbody>
</table>
Photos of Exemplary Problematic Driver Behaviors

- Use emergency or shoulder lane to overtake (滥用路肩)

- Large lateral movement; no lane marks (横移过大)

- Follow too closely with small spacing (紧跟前车)
Photos of Exemplary Problematic Driver Behaviors

 Interruption of motorized and non-motorized vehicles, pedestrian at intersections
(交叉路口机动车、非机动车与行人无规则干扰)

 Using wrong way (weird behaviors) (违反路权)

Pedestrians Don't Have Right of Way - Not Even on the Sidewalk!
Preliminary Research

Data Collection

SHARP2 NextGen Data Collection System at Tongji University

Distinguish “Aggressive” & “Cooperative” Driving Behavior

\[ \min \{ F_{\text{coo}}(x < a) + F_{\text{com}}(x > a) \} \quad a \in (13.8, 22.08) \]

\[ f(x_{\text{com}}) \]

\[ f(x_{\text{coo}}) \]

\[ F(x_{\text{协}}, < a) + F(x_{\text{竞}}, > a) \]

X = 19.3 m is an empirical threshold to distinguish two types of driving behaviors

Acceptable Spacing (m)

Lateral Movement of Lagged Vehicle during LC Process

<table>
<thead>
<tr>
<th>Lateral move (m)</th>
<th>Cooperative Frequency</th>
<th>%</th>
<th>Competitive Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.5</td>
<td>171</td>
<td>81.04%</td>
<td>67</td>
<td>54.03%</td>
</tr>
<tr>
<td>0.5-1</td>
<td>28</td>
<td>13.27%</td>
<td>30</td>
<td>24.19%</td>
</tr>
<tr>
<td>1-1.5</td>
<td>7</td>
<td>3.32%</td>
<td>12</td>
<td>9.68%</td>
</tr>
<tr>
<td>1.5-2</td>
<td>5</td>
<td>2.37%</td>
<td>8</td>
<td>6.45%</td>
</tr>
<tr>
<td>&gt;2</td>
<td>0</td>
<td>0.00%</td>
<td>7</td>
<td>5.65%</td>
</tr>
<tr>
<td>合计</td>
<td>211</td>
<td>100.00%</td>
<td>124</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Statistical Features of Cooperative/Competitive LC Behavior

<table>
<thead>
<tr>
<th>Category</th>
<th>LC time (s) Mean</th>
<th>LC time (s) SD</th>
<th>Crossing line time (s) Mean</th>
<th>Crossing line time (s) SD</th>
<th>Acceptable gap (m) Mean</th>
<th>Acceptable gap (m) SD</th>
<th>Average speed (km/h) Mean</th>
<th>Average speed (km/h) SD</th>
<th>Lagged veh move (m) Mean</th>
<th>Lagged veh move (m) SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative</td>
<td>4.53</td>
<td>1.13</td>
<td>2.42</td>
<td>0.75</td>
<td>17.97</td>
<td>7.81</td>
<td>23.18</td>
<td>4.54</td>
<td>0.34</td>
<td>0.39</td>
</tr>
<tr>
<td>Competitive</td>
<td>8.22</td>
<td>2.95</td>
<td>5.47</td>
<td>2.44</td>
<td>10.72</td>
<td>6.28</td>
<td>15.91</td>
<td>3.84</td>
<td>0.67</td>
<td>0.67</td>
</tr>
</tbody>
</table>
Thank You

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513-556-3781
Traffic and Granular Flow Conference 2017

The George Washington University (GWU)

January, 2016

Prepared by S. H. Hamdar

hamdar@gwu.edu

1
Location: Foggy Bottom Main Campus, Washington, DC, USA
Venue - Buildings

- Science and Engineering Hall (SEH) (opened in January of 2015)
- Marvin Center
Tentative Session Rooms

Lehman Auditorium: plenary session (top) and Mezzanine (bottom)

Grand Ballroom: plenary session (top) and standard session (bottom) set-ups
Social Event
Social Event (2)
Hotels

• Multiple hotels within walking distance. Main candidates (based on trade-off between affordability and comfort):
  
  • George Washington University Inn
  • Renaissance at Washington DC
Technical Tour

• The Turner Fairbank Highway Research Center: key research facility under the Federal Highway Administration (FHWA)

• Candidate labs to be visited (more than 10 labs operating):
  • Saxton Transportation Operations Laboratory
  • Human Factors Laboratory
  • Outdoor Impact Laboratory
  • Digital Highway Measurement Laboratory
Administrative Details

• Program
  • First day (evening):
    • Registration
    • Welcome reception
  • Second day:
    • Two parallel sessions (morning/afternoon)
    • Technical tour (afternoon)
    • Poster sessions (all-day)
  • Third day:
    • Plenary session (morning)
    • Two parallel sessions (afternoon)
    • Poster sessions (all day)
    • Social Event (evening)
  • Fourth Day:
    • Two parallel sessions (morning)
    • Poster session (morning)
    • Group picture and adjourn (noon)

• Registration Fees: same as current (TGF 2015)

Program kept general at this stage for added flexibility (number of coffee breaks, lunch time, starting and ending time of sessions ...etc.)
Administrative Details

• Deadlines: Two possibilities: same time frame adopted in TGF 2015
  • Same as TGF 2015 time windows
  • Coordinate event with ISTTT2017 event

• Scientific Committee: based on feedback from previous committees committee (Dr. Armin Seyfried, Dr. Victor Knoop, Dr. Winnie Daamen, Dr. Tianshu Li, Dr. Anders Johansson, Dr. Majid Sarvi, Dr. Martin Treiber ...etc.)
Thank you
New Business

- 2017 Annual Meeting Call for Papers
New Business

- The **Traffic Analysis Challenge** Using CV Related Data on the ITS Research Data Exchange (RDE) by USDOT ITS JPO:
  - RDE: [www.its-rde.net](http://www.its-rde.net)
  - Objective: Promote innovative analysis of RDE CV data
  - Award: Recognition, travel to conferences

- **Schedule**
  - Spring 2016 – announce competition
  - Summer 2016 – competition begins
  - Fall 2016 – competition ends
  - December-January 2017 – announce award winners
New Business

- **ITS JPO Contributions**
  - Staff and other resources to design, implement and facilitate the challenge

- **Potential TRB Committee Roles**
  - Define problems to address, analysis methods to use or data to analyze
  - Promote the Challenge launch, awards, or other events
  - Judge submissions and select winners
Adjourn

Please don’t forget to sign in!