

Minutes
Transportation Research Board
Committee on Traffic Flow Theory and Characteristics (ACP50)
Annual Meeting
Monday, January 09, 2023, 1:30 PM – 3:40 PM EST

Attendees: R. Aghamohammadi, M. Abbas, S. Ahn, B. Coifman, R. Cunard, V. Gayah, S. Hamdar, R. James, V. Knoop, L. Leclerq, H. Mahmassani, J. Sturrock, A. Zockaie, (...)

- 1- Prof. Leclerq called the meeting to order at 1:30 pm
- 2- Prof. Leclerq presented the agenda of the annual meeting.
- 3- R. Cunard and R. Bertini presented the TRB report:
 - a. Suggested to think the committee about the nomination of the Blue-Ribbon Award
 - b. Requested the committee to develop a one-page strategic plan of the committee mentioning what the committee wants to do and what resources will be needed for that in coming years.
 - c. Shared information about two upcoming conferences in Austria (June) and San Francisco, USA (July).
 - d. Invited everybody to join TRB's Dean's Lecture session and Chair session with the Secretary of Transportation.
 - e. The Impact factor of TRR increased 3-fold in last five years.
 - f. TRB attendance is slowly coming back to pre-covid level.
- 4- Prof. Leclerq presented the ACP50 Chair's report:
 - a. Introduces new members of the committee.
 - b. Announces an open position for State DOT member and invites suggestion for this.
 - c. The committee's gender ration (M/F) is now 31%
 - d. ACP50 is holding three Committee/Subcommittee meetings, one workshop, five lectern sessions, and five poster sessions in this year's TRB Annual Meeting
 - e. Shared some insights from the TRB meetings: request to keep MyTRB profile UpToDate; Subcommittees should be revisited. They should have a clear purpose, critical tasks and a time horizon; Task groups can be created with no time limits but will not have meeting spots during TRB; Operation and Safety sections have been merged into a single group; Triennial Strategic Plan should be elaborated for all committees.
- 5- Jim Sturrock presented Federal Highway Administration (FHWA) Office of operation research center report:
 - a. Active Demand Management Studies ongoing on two sites: Michigan and Seattle
 - b. State DOTs will share their experiences in January.
 - c. Traffic analysis tools getting updated. Web base training will be available focusing on microsimulation.
- 6- Rachel James presented Federal Highway Administration's (FHWA) Analysis, Modeling, and Simulation (AMS) Research Updates:
 - a. Connected and Automated Vehicle (CAV) AMS Research Program:
 - i. Vision: Help State and local agencies understand the most likely impacts of CAVs on their roadways according to key performance metrics to support improved operational and investment decision-making.
 - ii. Goals: Coordinate CAV AMS efforts across FHWA disciplines to accelerate development of AMS tools and models, including improved functionality and validation and to advance understanding of CAV impacts on roadways according to key performance metrics (e.g., safety, mobility, equity, sustainability).

- iii. Summary of Activities by Stakeholders: Develop Guidance, Conduct Behavioral Research, Establish and Update Standards, Collect and Disseminate Data, Characterize System Impacts, Map Research Needs to Potential Tools and Workflows, Engage Stakeholders, Research and Develop Use Cases and Pilot Projects and Research Human Factors.
 - iv. CAV AMS Program Plan Desired Outcomes: Active CAV AMS community, Track CAV technology capabilities and distribution, observe human behavioral responses to various types of CAV technology, Collect and share validated system data for CAV AMS and Regularly update available CAV AMS tools and resources.
- b. Ongoing Projects:
- i. CARMASM Data Collection: Collected data using both a readily identifiable, ADAS-equipped SAE International (SAE) Level 2 vehicle and an inconspicuous, manually driven Level 1 vehicle (MDV) in Northern Virginia, including in an active work zone. Collected 61 runs, or about 30 terabytes, of raw vehicle sensor data.
 - ii. Acquiring CAV Performance Datasets: Collected data using both readily identifiable and discreet ADAS-equipped Level 2 vehicles in central Ohio to leverage many of the active CAV deployments in the region. Collected 120 h of driving data.
 - iii. Third-Generation Simulation: Collected data using ADAS-equipped vehicle data (Level 1 and Level 2 functionality) during rush hour in multiple locations in Chicago, IL and Washington, DC. Collected accompanying aerial data by using both moving and stationary helicopters and high-altitude fixed cameras.
 - iv. ADAS and ADS Modeling Gap Report: Key Methodological Gaps are Impacts of technology, Behavior of ADAS/ADS-equipped vehicles with different cooperation classes, Behavior of ADAS/ADS-equipped vehicles with different powertrain systems, Interactions between ADAS/ADS-equipped vehicles, infrastructure, and other road users, Behavior of vehicles in parking areas and Investigations of regional travel behavior.
- c. CAV AMS Research Products:
- i. CAV AMS Cornerstone Framework Report is available. Download the report at: <https://rosap.nfl.bts.gov/view/dot/39965>
 - ii. CAV Model Improvement: Tool Development. The report documents new open-source tools that capture CAV driving behavior in microsimulation models. Open-Source Code available at: its.dot.gov/code/ or github.com/STOLAMS/
 - iii. CAV Impact Assessment, Case Studies:
 - 1. Developing Analysis, Modeling, and Simulation Tools for Connected and Automated Vehicle Applications: A Case Study for I-66 in Virginia. Available at: <https://www.fhwa.dot.gov/publications/research/operations/21050/21050.pdf>
 - 2. Developing Analysis, Modeling, and Simulation Tools for Connected Automated Vehicle Applications: A Case Study on SR 99 in California. Available at: <https://www.fhwa.dot.gov/publications/research/operations/21039/21039.pdf>
 - 3. Developing Analysis, Modeling, and Simulation Tools for Connected Automated Vehicle Applications: Traffic Optimization for Signalized Corridors—Case Studies in Ann Arbor, MI, and Conroe, TX. Available at:

<https://www.fhwa.dot.gov/publications/research/operations/21085/21085.pdf>

- iv. Multiresolution Modeling (MRM) for Traffic Analysis: State-of-Practice and Gap Analysis Report. Available at:
<https://www.fhwa.dot.gov/publications/research/operations/21082/index.cfm>
- v. MRM for Traffic Analysis: Case Studies Report. Available at:
<https://www.fhwa.dot.gov/publications/research/operations/22054/index.cfm>
- vi. MRM for Traffic Analysis: Guidebook. Available at:
<https://www.fhwa.dot.gov/publications/research/operations/22055/index.cfm>

7- The ACP50 Subcommittees' reports were presented:

- a. Joint Subcommittee on Traffic Simulation Models (ACP50-1; SimSub): no report was presented.
- b. Subcommittee on Crowd Flow Dynamics, Modeling and Management (ACP50-2): no report was presented.
- c. Subcommittee on Connected and Automated Traffic Flow (ACP50-3; CAT-Flow): A report was presented by the Committee's chair, Prof. Samer Hamdar:
 - i. 18 TRB 2023 papers handled by ACP50-3 directly; 13 submitted to new Special Call for Papers.
 - ii. One workshop titled "Connected and Automated Vehicles' (CAVs') Adoption in Freight, Ride-Share, Transit and Paratransit Services: From Behavioral Modeling to Fleet Deployment Studies." was organized during the TRB 2023 by the subcommittee.
 - iii. 1 Lectern Session (Dr. Rachel James) and 1 Poster Session (Dr. Danjue Chen) was held by the subcommittee members and friends.
 - iv. The committee membership is expanded, and the website is being updated: <https://tftcav.seas.gwu.edu>. If interested in joining the subcommittee and/or volunteering, a contact may be established with Prof. Samer Hamdar.
 - v. The 2023 subcommittee meeting was scheduled to be held on January the 9th, 2023 at the Marriott Marquis, Salon 9 (M2) from 6.00 PM EST.
 - vi. Research Needs and Progress related to CAV will be discussed in detail in the subcommittee meeting.
- d. Research Problem Statements Subcommittee: a report was presented by Prof. Gayah:
 - i. Goals of the Committee Research Coordinator: Identify research needs, develop research needs statements, seek funding sources, submit RNSs to funding programs, share information about research needs and research in progress and develop/maintain research portfolios.
 - ii. Research Needs Statements: Identify and explain research need that can eventually be turned into a project. Due Nov 1 annually. Invites volunteers to develop these. Contact Prof. Gayah for more details.
 - iii. Submitted one RNS recently last year jointly with SimSub titled "Simulating Mixed Heterogeneous Traffic Flows for Better Assessment of Heavy Vehicles". The RNS was Supported by: Virginia and Wisconsin DOTs, supported by North Carolina, California, Florida DOTs.
 - iv. Details on the NCHRP Synthesis program were introduced: the program aims at documenting current practices for specific highway topics with funding of the range of 55,000 USD. The deadline for submitting topics of the NCHRP Synthesis program is February the 17th 2023 Some potential Synthesis topic includes Use of ITS for-congestion management, planning for CAV impacts, Impacts of urban freight on traffic in city centers.

- e. Paper Review Subcommittee: figures on the 2023 TRB Annual Meeting review process lead by the ACP50 Committee were presented by Prof. Leclercq:
 - i. 172 papers are handled by the ACP50 Committee; 113 papers are submitted for presentation only. This is an increase if compared to the 2022 meeting (140 papers) but a decrease if compared to earlier years starting in 2017 (i.e., exceeding 190 papers).
 - ii. The 2023 Award for the Best Reviewer of Traffic Flow Theory was announced: Saif Eddin Jabari from New-York University, Abu Dhabi won the award.
- f. Awards Subcommittee: a report was presented by Prof. Ahn:
 - i. 5 awards are discussed within the committee (2 are specific to the TFTC committee, 3 are from TRB)
 - ii. This year, as part of a trial, papers submitted only for presentation are also accepted for the award, as long as they are later published in TRR.
 - iii. This year, as part of a trial, decisions on the Greenshield and Gartner awards are made on the same year.
 - iv. Award subcommittee: Rob Bertini, Jiwon Kim, Sue Ahn, Monica Menendez. The subcommittee chair, Monica Menendez is stepping down this year, and Jiwon Kim will be the next chair.
 - v. Nathan Gartner Award:
 - 1. 2022: 22-04077: A Real-Time Distributed Cooperative Adaptive Cruise Control Model Considering Time Delays and Actuator Lag (by Yingtong Tan and Kuilin Zhang).
 - 2. 2023: 23-04279: Traffic Flow as A Simple Fluid: Towards A Scaling Theory of Urban Congestion (by Jorge Laval).
 - vi. Greenshields Prize:
 - 1. 2022: There was no award.
 - 2. 2023: 23-02314: How Will Waymo Self-driving Cars Impact Traffic Flow? - Evidence from Empirical Data (by Danjue Chen, Tienan Li, Jorge Laval, Soyoun Ahn and Zuduo Zheng). Paper will be published in TRR under the name "How Will Level 4 Selfdriving Cars Impact Traffic Flow? - Evidence from Empirical Data" (by Danjue Chen, Tienan Li, Jorge Laval, Soyoun Ahn and Zuduo Zheng).
 - vii. Cunard Award:
 - 1. 2022: There was no nomination.
 - 2. 2023: There is one paper nominated.
 - viii. There is no nomination for Fred Burggraf Award for the year 2022 and 2023
 - ix. D. Grant Mickle Award:
 - 1. 2022: There was no nomination.
 - 2. 2023: There is one paper nominated.
- g. Mid-Year Meetings (by Prof. Leclercq): The 2023 midyear meeting will be held in Amsterdam, Netherlands. The 25th International Symposium on Transportation and Traffic Theory (ISTTT 25): July 15–17, 2024 in Ann Arbor, Michigan, United States. 2025 Summer Meeting will be selected next year. Prof. Ludo invites everyone to submit proposals.
- h. Outreach and Diversity Subcommittee: a report was presented by Prof. Talebpour: the newsletters, webinars, and website are being updated regularly. Newsletter (<http://tftcnews.blogspot.com/>) is celebrating its 10-year anniversary....12 issues with each issue corresponding to one months. ACP50 Journal Club: Started in December 2021 and has had 5 presentations in 2022 with a very small group. The rules of discussion have been refined - will be open to TFTC members and friends starting February 2023.
- i. Prof. Leclercq presented reshuffling of subcommittees:

- i. Joint Subcommittee on Traffic Simulation Models (ACP50(1) SimSub): This subcommittee is now declared as ACP80(1) with ACP50 as a supporting committee. Prof. Leclecq proposed to remove the mention within ACP50.
 - ii. Crowd Flow Dynamics, Modeling and Management (ACP50(2)). Prof. Hamdar made a motion to close the subcommittee due to its inactivity and better suitability with the pedestrian committee (ACH10). Prof. Jack Seconded the motion and all the members agreed to close ACP50 (2) Crowd Dynamics Subcommittee.
 - iii. Connected Automated Vehicles (ACP50(3)). This committee is very active and will continue as it is. ACP 50 (3) is proposed to be ACP 50 (1).
 - iv. Prof. Ludo invites proposal for new subcommittee; decision will be made in summer meeting. Prof. Marco, Prof Jack, Prof Alizulkar, Prof Dawson and Prof. Yeo volunteers for the formation of the subcommittee.
- 8- Liaison with other committees:
 - a. Joint Subcommittee on Traffic Simulations ACP80(1): Melson Shaw and Kaan Ozbay
 - b. Traffic Simulations Committee (ACP80): Kaan Ozbay
 - c. Highway Capacity Quality of Service Committee (ACP40): J. Sturrock
 - d. Young Members Council: E. Gonzales
- 9- International Liaisons:
 - a. Munich – Schwabing – Traffic Data Collection using Drones: data will be available late this year.
 - b. Integrated 4D driver modelling under uncertainty (i4Driving): Website: <http://i4driving.eu>
- 10- Announcements and Future Meetings:
 - a. Journal of Big Data Analytics in Transportation: Welcome all papers related to data & transportation science.
 - b. Upcoming conferences:
 - i. IEEE ITSC 2023 will be held in Bilbao, Spain from September 24th to 28th 2023.
 - ii. ISTDm 23 will be held at Ispra, Italy from June 19th to 22nd 2023.
 - c. Tennessee DOT collected video data of freeway. Will be available this summer.
- 11- The meeting was adjourned at 3:40 pm.

Prepared by Samer H. Hamdar
March 2023