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Education and Degrees

Ph.D. in Transportation Engineering, University of Tokyo, Japan, 2000
 M.S.C.E. in Transportation Engineering, Tsinghua University, China, 1996

Professional Experience

Associate Professor	2009 – Present	Texas Tech University
Assistant Professor	2004 –2008	Texas Tech University
Postdoctoral Researcher	2001- 2003	University of California, Berkeley
Postdoctoral Researcher	2000	University of Tokyo, Japan
Research Assistant	1997 - 2000	University of Tokyo, Japan
Transportation Engineer	Sep. 1996 – Sep. 1997	Beijing Institute of City Planning & Design, China
Faculty	Sep. 1990 – Sep. 1993	Hebei Polytechnic University, China

Research Interests

Traffic operation and control
 Intelligent transportation systems
 Traffic flow theory
 Application of advanced computing in transportation
 Computer-aided simulation and evaluation of transportation systems performance
 Public transit

Course Taught

CE 4361 Transportation Engineering
 CE 4371 Highway Geometric Design
 CE 5371 Advanced Highway System Design and Highway Capacity Analysis
 CE 5372 Advanced Traffic Engineering-I
 CE 5373 Advanced Traffic Engineering-II
 CE 5331-009 Advanced Topics in Transportation
 CE 5331-023 Transportation Planning
 CE 4101 (transportation)
 CE 4330 (transportation)

Advising (as committee chair)

PhD students 5
Master students 16
Postdoctoral researches 1

Professional Registration

P.E. (Texas)

Professional Affiliations

Institute of Transportation Engineers (ITE)
American Society of Civil Engineers (ASCE)
Institute of Electrical and Electronics Engineers (IEEE)
Transportation Research Board (TRB)

Professional Services

Associate Editor, International Journal of Vehicle Information and Communication Systems.
Advisory board member, Journal of Intelligent Transportation Systems.
Member of the Program Committee and *Associate Editor* of the conference proceedings, 10th-12th International IEEE Conference on Intelligent Transportation Systems, 2008-2010.
Guest Editor, *Journal of Intelligent Transportation Systems*. Special Issue: Intelligent Vehicle Navigation Systems, with Quddus Mohammed, Washington Ochieng, July 2007.

Awards and Honors

Teacher of the Year, Department Civil & Environmental Engineering, Texas Tech University, 2009.
Texas Tech University Hemphill-Wells New Professor Excellence in Teaching Award, Finalist of College of Engineering, 2006.
Featured Young Faculty in ENVISION 2(2), Newsletter of College of Engineering, Texas Tech University, 2006.
Scholarship of Japanese Ministry of Education, Culture, Sports, Science and Technology, 1997 – 2001.

Recent Publications in Refereed Archival Journals

1. Eugene, D. H., Liu, H., Cheu R. L., and Machemehl, R.B. (2011). "Assessing the Feasibility of Converting Two Way Left Turn Lane into Bus Rapid Transit Lane." Accepted for publication in *Journal of Transportation Research Record*.
2. Xu, H., Liu, H., and Tian, Z. (2011). "Control Delay at Diverging Interchanges." *Accepted for publication in Journal of Transportation Research Record*.
3. Xu, H., Liu, H., and Tian, Z. (2010). "Control Delay at Signalized Interchanges Considering Internal Queue Spillback." *Journal of Transportation Research Record*, No.2173, 123-132.

4. Lin, W. and Liu, H. (2010) "Enhancing Realism in Modeling Merge Junctions in Models for System Optimal Dynamic Traffic Assignment." *IEEE Transactions on Intelligent Transportation Systems*, **11**(4), 838-846.
5. Quddus, M.A., Washington, O., and Liu, H. (2010). "Editorial: Special Issue on Intelligent Vehicle Navigation (2)." *Journal of Intelligent Transportation Systems*, **14**(1), 1-2.
6. Xu, H., Liu, H., and Bao, Y. (2010). "Development and Application of a Kalman Filter and GPS Error Correction Approach for Improved Map-matching." *Journal of Intelligent Transportation Systems*, **14**(1), 27-36.
7. Tian Z., Kyte, M., and Liu, H. (2009) "Vehicle Tracking and Speed Measurement at Signalized Intersections Using Video-Image Systems." *ITE Journal*. **79**(1), 42-46.
8. Luis, G., Cheu, R.L., Machemehl, R.L., and Liu, H. (2009). "Bus Rapid Transit Features and Deployment Phases for U.S. Cities." In press, *Journal of Public Transportation*, **12**(2), 23-38.
9. Chen, S., Liu, H. and Tian. Z, and Jeryl D. H. (2009) "Surrogate Safety Assessment for A Tight Urban Diamond Interchange Using Micro-simulation." *Advances in Transportation Studies, an International Journal*, Vol. XVIII, 18-39.
10. Wei, H., Xu, T., and Liu, H. (2009). "Route-Choice Models Reflecting the Use of Travel Navigation Information in a Vehicle-Based Microscopic Simulation System." *International Journal of Vehicle Information and Communication Systems*, **2**(1/2), 27-39.
11. Tan, C-W, Park, S. Liu, H., Xu, Q., and Lau P. (2008) "Prediction of Transit Vehicle Arrival Time for Signal Priority Control: Algorithm and Performance." *IEEE Transactions on Intelligent Transportation Systems*, **9**(4), 688-696.
12. Tan, C-W, Li, M., Park, S., Lau, P. and Liu, H. (2008) "Communication of Transit Signal Priority Requests." *International Journal of Vehicle Information and Communication Systems*, **1**(3/4), 249-267.
13. Quddus, M.A., Washington, O., and Liu, H. (2008). "Editorial: Special Issue on Intelligent Vehicle Navigation." *Journal of Intelligent Transportation Systems*, **12**(4), 1-2.
14. Liu, H., Balke, K.N., and Lin, W. (2008). "A Reverse Causal-effect Modeling Approach for Real Time Signal Control of An Oversaturated Intersection." *Transportation Research, Part C*, **16**(6), 742-754.
15. Liu, H., Xu, H., and Bao, Y. (2008). "A Virtual Differential Map-matching Algorithm with Improved Accuracy and Computational Efficiency." *Journal of Navigation*, **61**(3), 1-14.
16. Liu, H., Zhang, J., and Cheng, D. (2008). "Evaluation of Transit Signal Priority Using an Analytical Approach: Analysis, Evaluation, and Statistical Test." *Journal of Transportation Systems Engineering and Information Technology*, **8**(2), 48-57.
17. Tian, Z., Varun, M, and Liu, H. (2008) "Effectiveness on Lead-lag Phasing on Progression Bandwidth." *Journal of Transportation Research Record*. No. 2080, 22-27.

18. Cheng, D., Tian, Z., and Liu, H. (2008) "Implementing Actuated Signal Controlled Intersection Capacity Analysis with Pedestrians." *Journal of Transportation Research Record*, No. 2071, 125-130.
19. Liu, H., Lin, W., and Tan C-W. (2007). "An Operational Strategy for Advanced Vehicle Location Based Transit Signal Priority." *ASCE Journal of Transportation Engineering*, **133**(9), 513-522.
20. Gong, H., Liu, H., and Wang B.H. (2007). "An Asymmetric Full Velocity Difference Car-following Model." *Journal of Physica A: Mathematical and Theoretical*, Vol.387, 2595-2602.
21. Li, L., Lin, W., and Liu, H. (2006). "A Type-2 Fuzzy Logic Approach for Short-term Traffic Forecasting." *IET Journal of Intelligent Transportation Systems*, **153**(1), 33-40.
22. Liu, H., Skabardonis, A., and Li, M. (2006). "Simulation of Transit Signal Priority Using the NTCIP Architecture." *Journal of Public Transportation*, **9**(3), 117-136.
23. Liu, H., Skabardonis, A., Zhang W.B., and Li, M.. (2004). "Optimal Location of Detectors for Transit Signal Priority." *Journal of Transportation Research Record*, No. 1867, 144-150.

Publications in Conference Proceedings and Other Non-journal Articles

Fully Refereed

1. Eugene, D. H. , Liu, H., Cheu, R.L., and Machemehl, R.B. "Assessing the Feasibility of Converting Two Way Left Turn Lane into Bus Rapid Transit Lane." Proceedings of the 90th Transportation Research Board Annual Meeting, Washington D.C., January 2011.
2. Xu, H., Liu, H., and Tian, Z. "Control Delay at Diverging Interchanges." Proceedings of the 89th Transportation Research Board Annual Meeting, Washington D.C., January 2011.
3. Xu, H., Liu, H., and Tian Z. "Control Delay at Signalized Interchanges Considering Internal Queue Spillback." Proceedings of the 89th Transportation Research Board Annual Meeting, Washington D.C., January 2010.
4. He, Q., Lin, W., Liu, H., and Head L.K. "Heuristic Algorithms to Solve 0-1 Mixed Integer LP Formulations for Traffic Signal Control Problems." IEEE/INFORMS International Conference on Services, Logistics, and Informatics, July 15-17, 2010, Qingdao, China.
5. Xu, F., Zong, T. and Liu, H. "Traffic Counting Errors Due to the Occlusion Effect of Video Image Vehicle Detection System." ICCTP Annual Conference, Beijing, August 4-8, 2010, Beijing, China.
6. Liu, H., Wei, H., Xu, H., and Bao, Y. "Simultaneous Correction of GPS Error and Map Error for Improved Map-matching: Algorithm and Application." *Proceedings of SPIE* for 2008 Geoinformatics annual meeting, Guangzhou, China, August 2008. Vol. 7145.
7. Xu, H., Liu, H., and Bao, Y. "An Enhanced Kalman Filter Approach for Improved Map-matching." Preprint CD-ROM. *The 87th Annual Meeting of Transportation Research Board*. January 2008.

8. Xu, H., Liu, H., and Bao, Y. "A Virtual Differential Map-matching Algorithm." *Proceedings of the IEEE 10th World Conference on Intelligent Transportation Systems*, 448-453. June 2007.
9. Tan, C-W, Li, M., Park, S., Lau, P., Liu, H., and Zhang, W.B. "A Supply-demand Model for Communication of Transit Signal Priority Requests." *Proceedings of International Conference on Multimedia and Ubiquitous Engineering*, 484-491. April 2007.
10. Zheng, J., Wang, Y., Liu, H., and Hallenback, M.E. "Modeling Impact of Near-side Bus Stop on Transit Delay at Signal Priority Enabled Intersections." Preprint CD-ROM. *The 86th Annual Meeting of Transportation Research Board*. January 2007.
11. Tan, C-W., Park S., Zhou, K., Liu, H., Lau, P., Li, M., and Zhang W.B. "Prediction of Transit Vehicle Arrival Times at Signalized Intersections for Signal Priority Control." *Proceedings of the IEEE 9th International Conference on Intelligent Transportation Systems*, 1477-1482. September 2006.
12. Li, L., Lin W., and Liu H. "Traffic Signal Priority/Preemption Control with Colored Petri Nets." *Proceedings of the IEEE 8th International Conference on Intelligent Transportation Systems*, 694-699. September 2005.
13. Lin, W., and Liu, H. "A Mathematical Programming Module for Merge Control in System Optimal Dynamic Traffic Assignment." *Proceedings of the IEEE 8th International Conference on Intelligent Transportation Systems*, 103-108. September 2005.
14. Liu, H., Song, J., and Yin. Y. "A Simplified Method for Estimation of Back of Queue and its Application." *Proceedings of IEEE Intelligent Vehicle Symposium*, 662-668. June 2005.
15. Zhu, L., Song, J., Huang, Q., Zhang, M., and Liu H. "A Novel Module of Tracking Vehicles with Occlusion." *Proceedings of IEEE Intelligent Vehicle Symposium*, 893-899. June 2005.
16. Li, M., Yin, Y., Zhou, K., Zhang W.B., Liu, H., and Tan C-W. "Adaptive Transit Signal Priority on Actuated Signalized Corridors." Preprint CD-ROM. *The 84th Annual Meeting of Transportation Research Board*. January, 2005.
17. Yin, Y., Liu, H., and Benouar, H. "A Note on Equity of Ramp Metering." *Proceedings of IEEE 7th International Conference on Intelligent Transportation Systems*, 497-502. October, 2004.
18. Liu, H., Li, M., Skabardonis, A., Zhang, W.B., Zhou, K., Tan, C-W., and Park S. "Development and Application of a Simulation Tool for Transit Signal Priority." Preprint CD-ROM. *The 83rd Annual Meeting of Transportation Research Board*. January 2004.
19. Liu, H., Skabardonis, A., and Zhang, W.B. "A Dynamic Model for Adaptive Bus Signal Priority." Preprint CD-ROM. *The 82nd Annual Meeting of Transportation Research Board*. January 2003.
20. Liu, H. and Kuwahara, M. "An Approach on Network Traffic Signal Control Under the Real-time and Over-saturated Flow Condition." Preprint CD-ROM. *The 81st Annual Meeting of Transportation Research Board*. January 2001.

21. Liu, H. and Kuwahara, M. "A Study on Real-time Signal Control for an Isolated Over-saturated Signalized Intersection." *Proceedings of the 7th World Congress on Intelligent Transportation Systems*. November 2000.

Research Projects (as PI, co-PI, or group member)

1. Management of Operating and Management of Traffic Management Center. City of Lubbock, \$98,000, 2007-2011.
2. Loop 289 Mobility Study, Phase II: Interchanges and Frontage Roads. Texas Department of Transportation, \$58,000, 2011-2012.
3. Successful Bicycle Planning in Mid-size Cities. Texas Department of Transportation, \$68,000, September 2009 – August 2010.
4. Interagency Agreement Contract with Texas Department of Transportation, \$150,000, September 2009 – August 2011.
5. Loop 289 Highway Corridor Traffic Study – Phase I: I-27 to Spur 327. Texas Department of Transportation, \$49,588, September 2007 - August 2008.
6. Testing of Pavement Marking Materials. Texas Department of Transportation, \$340,000, September 2007 – August 2010. (In collaboration with TTI)
7. Comprehensive Planning and Design Guidelines for Incorporating a Bus Rapid Transit Scenario to the Analysis of Texas Highway Corridors. Texas Department of Transportation, \$263,856, September 2006 – August 2008. (In collaboration with UT and UT El Paso)
8. Managing Freeway Operation During Weather Events. Texas Department of Transportation, \$138,531, September 2005 – August 2006. (In collaboration with TTI)
9. Development of Hardware-in-the-loop (HiL) Simulation and Virtual 170/2070 Controller. California Department of Transportation, \$185,000, September 2004 – August 2006.
10. Red Light Running Avoidance. California Department of Transportation, \$309,639, July 2004 – June 2006.
11. Toward Development of Adaptive Transit Signal Priority Systems. California Department of Transportation, \$191,184, September 2003 – August 2004.
12. Development of an Integrated Microscopic Traffic Simulation and Signal Timing Tool. California Department of Transportation, \$193,363, July 2004 – June 2005.
13. Development of Deployment Strategy for an Integrated BRT System. Federal Transit Administration and California Department of Transportation, \$200,000, July 2002 – June 2004.
14. Field Evaluation of VTA Line 22 Bus Signal Priority System. California Department of Transportation, \$100,000, July 2003 – June 2004.
15. Development of Bus Rapid Transit (BRT) Information Clearing House. California Department of Transportation, \$200,000, July 2002 – June 2004.