

Frank H. Liu, Ph.D. Curriculum Vitae

Education

Ph.D. Transportation engineering, University of Tokyo, Japan, 1997 - 2000
M.S. Transportation Engineering, Tsinghua University, China, 1993 - 1996
B.S. Civil Engineering, Hebei University of Technology, China, 1986- 1990

Professional experience

Assistant Professor, Dept. of Civil and Environmental Engineering	2004-present
Staff Postdoctoral Research Engineer, University of California, Berkeley	2001-2004
Research Associate, University of Tokyo, Japan	2000-2001
Civil Engineer (transportation), Beijing Municipal Institute of City Planning & Design (BMICPD), China.	1996-1997
Instructor, Hebei University of Technology, China	1990-1993

Research interests

- Traffic operation and control
- Network modeling and traffic flow theory
- Intelligent transportation systems
- Computer-aided simulation and evaluation of transportation systems performance
- Public transit

Recent publications

Archival journals (published or accepted for publication)

- (1) Cheng, D., Tian, Z., and **Liu, H.** (2008). "Implementing actuated signal controlled intersection capacity analysis with pedestrians." Accepted, *Journal of Transportation Research Record*.
- (2) Tian, Z., Mangal, V., and **Liu, H.** (2008). "Effectiveness on lead-lag phasing on progression bandwidth." Accepted, *Journal of Transportation Research Record*.
- (3) **Liu, H.**, Zhang, J., and Cheng, D.X. (2008). "Evaluation of transit signal priority using analytical approach: analysis, evaluation, and statistical test." Accepted, *Journal of transportation systems engineering and information technology*.
- (4) **Liu, H.**, Lin, W., and Tan, C. (2007). "An operational strategy for Advanced Vehicle Location based Transit Signal Priority." *ASCE Journal of Transportation Engineering*, **133**(9), 513-522.
- (5) **Liu, H.**, Xu, H., and Bao, Y. (2007). "A virtual differential map matching algorithm with improved accuracy and computational efficiency." *Journal of Navigation*, Vol. 61 (3).
- (6) Gong, H., **Liu, H.**, and Wang, B.H. (2008). "An asymmetric full velocity difference car-following model." *Journal of Physica A: Mathematical and Theoretical*, Vol. 387, 2595-2602.
- (7) 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.
- (8) **Liu, H.**, Skabardonis, A., and Li, M. (2006). "Simulation of Transit Signal Priority Using the NTCIP Architecture." **9**(3), 117-136, *Journal of Public Transportation*.
- (9) **Liu, H.**, Alex, Skabardonis, Zhang, W.B, and Lee, M. (2004). "Optimal Location of Detectors for Transit Signal Priority." *Journal of Transportation Research Record*, No. 1867, 144-150.

- (10) **Liu, H.**, Balke, K., and Lin, W. (2008). "A reverse causal-effect modeling approach for real time signal control of an oversaturated intersection." Accepted, *Transportation Research, Part C*.

Funded research projects

At Texas Tech University (either as PI or co-PI)

- (1) Highway corridor traffic analysis. (\$50,000, FY 2007-2008, Texas Department of Transportation, PI).
- (2) Operating and management of traffic management center. (\$65,000, FY 2007-2010, City of Lubbock, PI).
- (3) Testing of pavement marking materials. (\$300,000*, FY 2007-2010, Texas Department of Transportation, with Zhang, Y. et al., PI at TTU).
- (4) Comprehensive planning and design guidelines for incorporating a bus rapid transit scenario to the analysis of Texas highway corridors. (\$263,856, FY 2006-2008, Texas Department of Transportation, in collaboration with Mehmehl R. and Cheu, R., PI at TTU).
- (5) Managing freeway operation during weather events. (\$103,587, FY 2005-2006, Texas Department of Transportation, with Balke K. et al., PI at TTU).
- (6) Development of Hardware-in-the-loop (HiL) simulation and virtual 170/2070 controller. (\$185,000, FY 2003-2005, California Department of Transportation, with Skarbadonis A. et al., PI).

At University of California, Berkeley (either as PI or co-PI)

- (7) Red light running collision avoidance. (\$300,000*, California Department of Transportation).
- (8) Measure and field test of the effectiveness of adaptive traffic control for arterial and freeway management. (\$240,000*, California Department of Transportation).
- (9) Development of an integrated microscopic simulation and signal timing optimization tool. (\$200,000, California Department of Transportation).
- (10) Improve safety at Highway-rail grade crossings. (\$250,000*, California Department of Transportation).
- (11) Evaluation of VTA's (Santa Clara County Transportation Authority) bus signal priority system. (\$100,000, California Department of Transportation).
- (12) Toward deployment of adaptive transit signal priority systems (\$220,000, California Department of Transportation).

Professional activities

Associate Editor, International Journal of Vehicle Information and Communication Systems.

Guest Editor, special issue on intelligent vehicle navigation, Journal of Intelligent Transportation Systems, 2007.

Session Chair, the 11th World Conference on Transport Research, University of California, Berkeley, June 2007.

Member of the Program Committee and Associate Editor of the proceedings, 10th International IEEE Conference on Intelligent Transportation Systems, September, 2007.

Honors and awards

- Texas Tech University Hemphill-Wells New Professor Excellence in Teaching Award, nominee of College of Engineering, 2006.
- Featured Young Faculty in ENVISION 2(2), Newsletter of College of Engineering, Texas Tech University, 2006.
- Sigma Xi (2004 -).