H. OLIVER GAO
Civil and Environmental Engineering
Systems Engineering, and
Cornell Institute for Public Affairs
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Education

UNIVERSITY OF CALIFORNIA, DAVIS, CA. **Ph.D. 2004**
Dissertation: *Spatial and temporal statistical data analyses of tropospheric ozone, NOx dynamics and transportation systems.* (UCTC Dissertation Award)
Dissertation Committee: Debbie Niemeier (Chair), Mike Kleeman, Daniel Chang.

UNIVERSITY OF CALIFORNIA, DAVIS, CA. **M.S. (Agri. & Resource Economics) 2004**

UNIVERSITY OF CALIFORNIA, DAVIS, CA. **M.S. (Statistics) 2004**

TSINGHUA UNIVERSITY, BEIJING, CHINA. **M.S. (Civil Engr.) 1999**

TSINGHUA UNIVERSITY, BEIJING, CHINA. **DUAL DEGREE B.E. (Environ. Engr.) 1996**
Senior Thesis: *Data Analysis and Modeling of Transportation and Air Quality in Beijing.* Advisor: Prof. Kebing He

TSINGHUA UNIVERSITY, BEIJING, CHINA. **B.E. (Civil Engr., with honor) 1996**
Senior Thesis: *Numerical methods and Finite Element Analysis of pile-raft foundations.* Advisor: Prof. E. Song.

Experience

EDITOR-IN-CHIEF, *Transportation Research Part D: Transport and Environ.* **Jan. 2014-Jan. 2018**

DIRECTOR, CORNELL SYSTEMS ENGINEERING PROGRAM **Jul. 2015-**

DIRECTOR, CENTER FOR TRANSP., ENVIRON., AND COMM. HEALTH **NOV.2016-**

ASSOC. DIRECTOR, CORNELL PROGRAM IN INFRASTRUCTURE POLICY **Jan. 2014-**

ASSOC. DIRECTOR, CORNELL ENERGY SYSTEMS INSTITUTE (CESI) **Jan. 2018-**

CORNELL UNIVERSITY, ITHACA, NY.
The Inaugural Howard Simpson Professor **Jul. 2021-**
Professor **Jul. 2018-**
Associate Professor **Jul. 2011-Jun. 2018**
Assistant Professor **Jul. 2005-Jun. 2011**
Elected member in the graduate fields of
Systems Engineering;
Computing and Information Science;
Civil and Environmental Engineering;
Air Quality—Earth and Atmospheric Science;
Cornell Institute for Public Affairs (CIPA)

THE ROHATYN GROUP (TRG) MANAGEMENT LP, NEW YORK, NY **Jan.—Jun. 2005**
Senior QUANT, advanced mathematical and statistical modeling, emerging market

UNIVERSITY OF CONNECTICUT, STORRS, CT. **Sep. 2004-Jan. 2005**
Postdoctoral Scholar: *technology innovation for clean transportation (hybrid-diesel electrical bus technologies and particulate matter emissions).*

UNIVERSITY OF CALIFORNIA, DAVIS, CA. **Aug. 1999-Aug. 2004**
Post-graduate researcher: *Transportation Systems for Environment/Energy Sustainability*

Research

Methodological: systems engineering, data science, networks/complex systems, engineering computing, statistics/econometrics, and mathematical optimization & operations research for Sustainable Infrastructure/Technology Systems, Healthy Community, and Smart Cities

- **Cooperative networked built-and-natural environment:** Computational infrastructure and environment system sustainability management and optimization for the protection of human health and natural systems; inter-relationship between infrastructure and air quality, multi-scale air quality modeling– linking health risks modeling to air quality, infrastructure investment, and policy;
- **Technology/Policy innovation and assessment for clean transportation and community health** (hybrid-diesel electrical technology, alternative fuels, diesel retrofit, congestion pricing)— measurement, integrated modeling, and systems analytics of environment and health impacts from alternative vehicle/engine/fuel technologies and policy innovation;
- **Data science, deep learning, and systems analytics for the planning and management of complex systems/networks:** integrated infrastructure and environment/energy systems modeling and advanced decision methodologies (e.g., low carbon and low emission transportation systems; complex systems of coupled transportation, environment and energy networks)
- **Cyber-innovation in data-driven high-fidelity urban informatics for healthy living in smart & sustainable cities:** air quality and exposure monitoring, cellular microwave networks for air quality and precipitation monitoring, advanced travelers' general information systems (ATGIS);
- **Behavior and agent-based systems modeling:** generalized matching theory in two-sided networks; hierarchical multi-stakeholder modeling and mechanism design in public-private partnership for sustainable and resilient infrastructure systems;
- **Performance-based engineering and life-cycle management of infrastructure and technology systems：** mathematical modeling and control theory for life-cycle management optimization of sustainable infrastructure and environment systems--technology, system analytics, and decision science;
- **Green supply chain and logistics**: low carbon agriculture systems and food supply chains; mathematical systems modeling and policy analyses for food security and carbon policy.

Teaching

- SYSEN6000: Foundation of Complex Systems
- SYSEN 6100: Ezra Roundtable Systems Seminar Series
- SYSEN 5300/5310: Systems engineering and six sigma for the design and operation of reliable systems (including Distance Learning)
- SYSEN 5400: Theory and application of systems architecting (including Distance Learning)
- CEE 4650/6650 Transportation systems and air quality planning and modeling

SUMMARY OF PROFESSIONAL ACCOMPLISHMENTS

Dissemination of Research

Refereed Journal Publication: 100+ in print (*Environmental Science &Technology, Science, Atmospheric Environment, Statistis Modeling, IEEE Transactions on Vehicle Technology, Renewable & Sustainable Energy Reviews, Networks and Spatial Economics, Transportation Research A: Policy and Practice, Transportation Research B: Methodology, Transportation Research C: Emerging Technologies, Transportation Research D: Transport and Environment, Transportation Research E: Logistics and Transportation Review, ASCE-Transportation Engineering, Food Policy, Energy Policy, Transport Policy, and Biomass and Bioenergy*).

Technical Report: 13.

Media coverage: Scientific American, Physics Today, Science Daily, CleanTechnica, Cornell Chronicle, Houston Chronicle, Public Citizen, Phys.org, Science Daily, AAAS EurekAlert!, TexasVox, Houston Public Media, Los Angeles Headlines, Headlines & Global News.

Awards and Honors

Cornell College of Engineering Inaugural Howard Simpson Professor, 2021
Cornell College of Engineering James and Mary Tien Excellence in Teaching Award, 2010;
Nomination: Cornell University Kendall S. Carpenter Memorial Advising Award, 2008;
University of California Transportation Center Ph.D. Dissertation Award, 2004;
NSF Future Engineering Education Scholars (EES) Award, 2002;
Nortel Business Plan Competition Award, Tsinghua University, 1998;
IET International Fellowship, International Engineering Technology Inc., 1998;
SANWA Bank International Fellowship, 1995; Tsinghua University Fellowships, 1992-1994.

Research Grants

Total Number of Grants – 26 – $17.6 million (NSF, USDA, USDOT, US EPA, Lioyd's Register Foundation UK, NYSDOT, New York Energy Research Authority, NYMTC, etc.)

PI for 13 Grants, ~$12.5 million total directly managed by Gao.

Software

CU-PPS: official software for New York City transportation conformity and congestion management: Web-based software integrating activity-based travel demand models with EPA MOVES model

Professional Service

Editor-in-Chief, *Transportation Research D: Transport and Environment*; EPA's Federal Advisory Committee Act (FACA) MOVES Review Work Group; Transportation Research Board (TRB) Research Topics Subcommittee of ADC10 (Transportation and Environment); TRB Committee ADC20 (Transportation and Air Quality); TRB Committee AHD60 (Equipment Maintenance); TRB SHRP2 Capacity Technical Expert Task Group (TETG) for C04: Improving Understanding of Highway Users and the Factors Affecting Travel Demand; TRB SHRP2 Capacity TETG for C10A: Partnership to Develop an Integrated Travel Model.

University Service – Director Cornell Systems Engineering; CIPA governance committee, Chair CEE search committees; Member: search committees in CEE, ORIE, MAE, ECE, and SYSEN; Member: Ad-hoc committees on tenure reviews; Member: Cornell Health's Quality Initiatives Workgroup; Member: Cornell's travel offset policy Committee of the Climate Action Plan; International Studies Committee; University Transportation Advisory Committee; Fellow, Cornell ACSF.

Advising & Mentoring

Postdocs Supervised: 11 (5 Assist. Prof., at ASU, McGill, NISTU, BYU, and Kennesaw State, respectively);

Graduate Students Supervised (as Committee Chair): 13 Ph.D. students (8 to completion of Ph.D. degree, 3 Assist. Prof.); 10 M.S. students; 60+ M-Eng students; As Committee Member: 11 Ph.D. students (6 in CEE, 1 in AEM, 1 in MAE, 1 in CRP, 1 in Food Science, 2 in Chemical and Biomolecular Engineering), 1 M.S. student (in Statistics);

Awards and Honors to Graduate Students Supervised: *American Association of Advanced Science (AAAS) Fellowship; U.S. EPA Science To Achieve Results (STAR) Fellowship; FHWA Dwight David Eisenhower Transportation Fellowship (2); New York State Energy Research and Development Authority Ph.D. Fellowship; New York Metropolitan Transportation Council (NYMTC) September 11th Memorial Program Graduate Fellowship*; *Cornell Institute for African Development (IAD) Fellowship; CTECH PhD Dissertation Award; CUTC 2022 Student of the Year Award; Cornell Center for Social Sciences (CCSS) 2022-23 Data Science Fellowship*

Peer-Reviewed Publication

(&Recent Submissions)

A **G** indicates a graduate student supervised, a **P** indicates a postdoc supervised, a **V** indicates a visiting scholar supervised, an **UG** indicates an undergraduate research assistant supervised.

1. Amirgholy, M.P, M. Nourinejad, , **H.O. Gao** (2022). Optimal traffic operation for maximum energy efficiency in signal-free urban networks: a macroscopic analytical approach, accepted in *Applied Energy*
2. Amirgholy, M.P, M. Nourinejad, , H.O. Gao (2022). Traffic Operations in Signal-Free Networks Balancing Efficiency and Robustness at a Macroscopic Scale, under review, *Transportation Research Interdisciplinary Perspectives*
3. Jingwen Gao, Zhaowen Qiu, Wen Cheng, **H O. Gao** (2022). Children's exposure to BC and PM and respiratory tract deposited dose while commuting to school, Accepted in *Ecotoxicology and Environmental Safety*
4. Baghestani, A., M. Tayarani, R. Nadafianshahamabadi, M. Allahviranloo, and **H. O. Gao** (2022). New York City Cordon Pricing and Its' Impacts on Disparity, Transit Accessibility, Air Quality, and Health, *Case Studies on Transport Policy*, https://doi.org/10.1016/j.cstp.2022.01.009
5. Tan, Zhen, H. K. Chang, L. Fan, **H. O. Gao** (2022). Transportation Systems Management Considering Dynamic Wireless Charging Electric Vehicles: Review and Prospects, accepted in *Transportation Research Part E*
6. Yang, Shiyu, H. Oliver Gao, Fengqi You (2022). Model Predictive Control for Demand- and Market-Responsive Building Energy Management by Leveraging Active Latent Heat Storage, accepted in *Appled Energy*
7. Pan, S.**P**, Wendi Yu, L. Fultonc, J. Junge, Y. Choi, and **H. O. Gao** (2022). Impacts of the large-scale use of passenger electric vehicles on public health in 30 U.S. metropolitan areas, revision under review, *Renewable and Sustainable Energy Review*
8. Yang, Shiyu, H. Oliver Gao, Fengqi You (2022). Model Predictive Control in Phase-Change-Material-Wallboard-Enhanced Building Energy Management Considering Electricity Price Dynamics, accepted *Appled Energy*
9. Zhu, Xin-hang, Hong-di He, Kai-fa Lu, Zhong-ren Pengb, **H. Oliver Gao (2022).** Characterizing carbon emissions from China V and China VI gasoline vehicles based on portable emission measurement systems, accepted in *Journal of Cleaner Production*

10. Shi, J., Nanpeng Yu, and **H. O. Gao** (2022). Efficient Battery Energy Storage System Management Based on Lyapunov Optimization for Commercial Buildings, accepted in *IEEE Transactions on Smart Grid*
11. Shi, J. and **H. O. Gao** (2022). Efficient Energy Management of Wireless Charging Roads with Energy Storage for Coupled Transportation–Power Systems, accepted in *Applied Energy*
12. Yuechen Liu, Mohammad Tayarania, **H. O. Gao** (2022). An Agent-based Travel and Charging Behavior Model for Forecasting High-resolution Spatio-temporal Battery Electric Vehicle Charging Demand. Accepted in *Energy*.
13. Shi, J., Nanpeng Yu, and **H. O. Gao** (2022). Bidding Strategy for Wireless Charging Roads with Energy Storage in Real-Time Electricity Markets, accepted in *Applied Energy*
14. Desai, S., Mohammad Tayarani[P] , **H.O. Gao** (2022). A Direct Path from Traffic Activity to Air Quality: Developing a Machine Learning Model to Predict High Resolution Particulate Matter Concentration, accepted in *Transportation Resarch Part D*.
15. Keane, R., and **H. O. Gao** (2022). Gradient Estimation in Stochastic and Deterministic Models, submitted to *Operations Research*
16. Yang, S., Gao, H. O., You, F. (2023). Model Predictive Control for Distributed Energy Systems Management in Electrifying the Building Sector: carbon emission reduction in response to dynamic electricity price and carbon intensity. 2023 American Control Conference. San Diego, CA, USA. Submitted.
17. Yang, S., Gao, H. O., You, F. (2022). Model Predictive Control for Price-Based Demand-Responsive Building Control by Leveraging Active Latent Heat Storage. 2022 IEEE 61st Conference on Decision and Control (CDC). Cancún, Mexico. Accepted.
18. Yang, S., Gao, H. O., You, F. (2022). Phase-Change-Material-Enhanced Grid-Interactive Building Energy Management: An Evaluation of Different Designs and Controls in Different Metro Areas of the US. In 14th International Conference on Applied Energy. Germany.
19. Yang, S., Gao, H. O., You, F. (2022). Model Predictive Control for Price-Based Demand-Responsive Control of PCM-Wallboard-Enhanced Buildings. In CEN2022-Applied Energy Symposium 2022. Ningbo, China.
20. Wang, D., M. Tayarani, B.Y. He, J. Gao, Joseph Y. J. Chow, **H. O. Gao**, and K. Ozbay (2022). Transportation electrification for climate action goals in the post-pandemic era: an agent-based travel behavior and emission modeling approach. Submitted to *Environmental Science and Technology*.
21. Lejian He, Laijun Zhao, Yonghong Liu, Zhaowen Qiu, **H. O. Gao** (2022) Respiratory effects of particulate matter exposure during cycling in three Chinese cities, submitted to *Transportation Research Part D*
22. Nadafianshahamabadi, Razieh, Ananya Roy, Tammy Thompson, **H.O. Gao** (2022). Disparities in Exposure to Different Vehicle Types Emissions: Evidence from A Hyper-Local Integrated Transportation, Emission, And Dispersion Modeling System, submitted to *Environmental Research Letters*.
23. Lewis, Emily, J. Ponnock, Q. Cherqaoui, S. Holmdahl, Y. Johnson, A. Wong, **H. O. Gao** (2021). Architecting Urban Air Mobility Airport Shuttling Systems with Case Studies: Atlanta, Los Angeles, and Dallas, *Transportation Research Part A: Policy and Practice, Volume 150, Pages 423-444*
24. Baghestani, A., M. Tayarani, M. Allahviranloo, and **H. O. Gao** (2021). Cordon Pricing, Daily Activity Pattern, and Exposure to Traffic-Related Air Pollution: A Case Study of New York City, *Atmosphere* 12, 1458. https://doi.org/10.3390/atmos12111458

25. Pan, S.[P], L. Fultonc, A. Royd, J. Junge, Y. Choi, and **H. O. Gao** (2021). Shared use of electric autonomous vehicles: energy, air quality, and health impacts of future mobility in the United States, *Renewable and Sustainable Energy Review, vol. 149(C)*

26. Nadafianshahamabadia, R., Mohammad Tayarani, **H. Oliver Gao** (2021). Impacts of transportation emissions on the risk of mortality: findings from the literature and policy implications, *Medical Research Archives,* European Society of Medicine, https://doi.org/10.18103/mra.v9i8.2502

27. Noam David, Yanyan Liu , Kingsley K. Kumah, Joost C. B. Hoedjes, Bob Su, **H. O. Gao** (2021). On the power of microwave communication data to improve agricultural needs in Africa. Proceedings: Hydrology, Water Resources Management and Protection of the Marine Environment-Selected Papers from the 16th International Conference on Environmental Science and Technology (CEST2019), https://www.mdpi.com/journal/water/special_issues/CEST2019

28. Wang, D., M. Tayarani, B.Y. He, J. Gao, Joseph Y. J. Chow, **H. O. Gao**, and K. Ozbay (2021). Mobility in Post-Pandemic Economic Reopening under Social Distancing Guidelines: Congestion, Emissions, and Contact Exposure in Public Transit. *Transportation Research Part A: Policy and Practice*. Volume 153, Pages 151-170

29. Keane, R., and **H. O. Gao** (2021). A formulation of the relaxation phenomenon for lane changing dynamics in an arbitrary car following model, *Transportation Research, Part C.* 125(2):103081, DOI:10.1016/j.trc.2021.103081

30. Zheng J., **H. O. Gao**, Bing Li, and Z. Qiu (2021). Commuter PM exposure and estimated life-expectancy loss across multiple transportation modes in Xi'an, China. *Ecotoxicology ana Environmental Safety*, Volume 214, 112117

31. Huang, W., Yonghong Liu; Hui Zhong; Kui Liu; **H. Oliver Gao**; Lejian He; Rui Xu; Hui Ding (2021) Assessment of personal exposures to PM for multiple transport modes. *Transportation Research Part D,* https://doi.org/10.1016/j.trd.2021.103086

32. Akaabneh, F.[G], Ali Diabat, **H.O. Gao** (2020). Benders decomposition for inventory vehicle routing problem with perishable products and environmental costs. *Computers ana Operations Research,* Volume 113, January 2020, 104751

33. Sayarshad, H.[P], **H. O. Gao** (2020). A scalable non-myopic atomic game for a smart parking mechanism, *Transportation Research Part E: Logistics and Transportation Review, Volume 140, August 2020, 101974 ,* https://doi.org/10.1016/j.tre.2020.101974

34. Amirgholy, M.P, M. Shahabi, , **H.O. Gao** (2020). Traffic automation and lane management: communicant, autonomous, and human-driven vehicles, *Transportation Research Part C: Emerging Technologies*. Volume 111, February 2020, Pages 477-495

35. Sayarshad, H.[P], V. Mahmoodian, **H. O. Gao** (2020). Non-myopic dynamic routing of electric taxis with battery swapping stations, *Sustainable Cities and Society,* https://doi.org/10.1016/j.scs.2020.102113

36. Amirgholy, M.P, M. Nourinejad, , **H.O. Gao** (2020). Optimal traffic control at smart intersections: automated network fundamental diagram, *Transportation Research Part B: Methodology*. https://doi.org/10.1016/j.trb.2019.10.001

37. Akaabneh, F.[G], Ali Diabat, **H.O. Gao** (2020). Unified Framework for Efficient, Effective and Fair Resource Allocation at Food Banks: Approximate Dynamic Programming Approach., *Omega: The International Journal of Management Science,* https://doi.org/10.1016/j.omega.2020.102300

38. Song, Hwanseok, Neil Lewis, Jr, Matthew Ballew, Mario Bravo, Julie Davydova, **H. Oliver Gao**, Robert Garcia, Sofia Hiltner, Sarah Naimain, Adam Pearson, Rainer Romero-Canyas, Jonathon Schuldt (2020). What counts as an "environmental" issue? Differences in environmental issue conceptualization across race, ethnicity, and socioeconomic status, *Journal of Environmental Psychology*. https://doi.org/10.1016/j.jenvp.2020.101404

39. Noam David, Asaf Rayitsfeld, **H. O. Gao** (2021).Analyzing 50 years of major fog events across the central coastal plain of Israel, *CEST2021*
40. Zhang, Yiye, M. Tayarani, S. Wang, Y. Liu, M. Sharma, R. Joly, A. RoyChoudhury, A. Hermann, **H. O. Gao**, J. Pathak (2021) Identifying Urban Built Environment Factors in Pregnancy Care and Maternal Mental Health Outcomes, accepted in *BMC Pregnancy ana Childbirth*
41. Keane, R., and **H. O. Gao** (2021). Fast calibration of car following models to trajectory data using the adjoint method, *Transportation Science.* , vol. 55, no. 3, pp. 592–615
42. Kumah, K. K., J. C. Hoedjes, N. David, B. H. P. Maathuis, M. Mumo, A. Limo, N. K. Muhoro, M. Miriti, H. O. Gao, and Z. Su (2021). The MSG technique: Improving Commercial Microwave Link Rainfall Intensity by using Rain Area Detection from Meteosat Second Generation, submitted to *Remote Sensing*
43. Sayarshad, H.[P], **H. O. Gao** (2020). Optimizing the dynamic switching in fixed and flexible transit services with an idle-vehicle relocation strategy and reductions in emissions, *Transportation Research Part A: Policy and Practice,* https://doi.org/10.1016/j.tra.2020.03.006
44. Baghestani, A., M. Tayarani, M. Allahviranloo, and **H. O. Gao** (2020). Evaluating the traffic and emissions impacts of New York City cordon pricing, *Sustainability* 2020, 12(9), 3655; https://doi.org/10.3390/su12093655
45. Sayarshad, H.[P], X. Du, **H. O. Gao** (2020). A partially observable Markov decision process for dynamic post-disaster debris clearance problem with a positioning of clearance equipment items strategy, *Transportation Research Part B, Volume 138, August 2020, Pages 352-372, https://www.sciencedirect.com/science/article/abs/pii/S0191261520303210*
46. Grafenstein, L[G]; **H. O. Gao** (2020). Infrastructure policy and public health: evidence from OECD countries, *Science of the Total Environment, Volume 750, 1 January 2021, 141157*
47. Kumah, K. K., J. C. Hoedjes, N. David, B. H. P. Maathuis, M. Mumo, A. Limo, N. K. Muhoro, M. Miriti, **H. O. Gao,** and Z. Su (2020). Investigating GPM IMERG-F rainfall estimates over Africa utilizing commercial microwave links and MSG satellite data, *Atmosphere 2020, 11(9), 884; https://doi.org/10.3390/atmos11090884*
48. Zhang, Y, M. Tayarani, S. J. AlAref, A. N. Beecy, , Y. Liu, E. Sholle, A. RoyChoudhury, K. M. Axsom, **H. O. Gao**, J. Pathak, and J. S. Ancker, (2020). Using Electronic Health Records for Population Health Sciences: A Case Study to Evaluate the Associations between Changes in Ejection Fraction and the Built Environment, accepted in JAMIA Open
49. Tayarani, M., Subhi Al Aref, James K.Min, Yiye Zhang, **H. O. Gao** (2020). New Evidence on the role of environmental and social determinants on mortality in heart failure patients, submitted to *Science of the Total Environment*
50. Pan, S.[P], J. Jung, Z. Li, X. Hou, A. Roy, Y. Choi, and **H. O. Gao** (2020). Air Quality Implications of COVID-19 in California, *Sustainability 2020, 12, 7067; doi:10.3390/su12177067*
51. Tayarani, M., A. Baghestani, M. Allahviranloo, and **H. O. Gao** (2020). Spatial/Temporal Variability in Transportation Emissions and Air Quality In NYC Cordon Pricing, *Transportation Research Part D: Transport and Environment,* Volume 89, December 2020, 102620
52. He, Hong-di[P], **H. O. Gao** (2020). Particulate Matter Exposure at a Densely Populated Urban Traffic Intersection and Crosswalk, accepted in *Environmental Pollution*
53. Akaabneh, F.[G], J. Lee, M. Gomez, **H.O. Gao** (2020). A systems approach to carbon policy for fruit supply chains: Carbon-tax, innovation in storage technologies or land-sparing? Accepted in *Science of the Total Environment.*
54. Oji, Chijioke and **H.O. Gao** (2020). Charting the path towards energy sustainability in Africa: An analysis of investment and policy for renewable energy development, under review *Energy Policy*

55. Oji, Chijioke and **H.O. Gao** (2020). Tackling the Energy Access Challenge: A Review of Financing Approaches and Mini-Grid Market Development in Sub Saharan Africa, under review *Renewable & Sustainable Energy Reviews*
56. Tayarani, M., Subhi Al Aref, James K.Min, Yiye Zhang, **H. Oliver Gao** (2020). New Evidence on the role of environmental and social determinants on mortality in heart failure patients, submitted to *Science of the Total Environment*
57. Tayarani, M., S. Wang, R. Nadafianshahamabadi, Y. Zhang, and **H. O. Gao** (2020). The path between place of living and mental health: transportation and land use systems impacts on postpartum depression dncidence, presented at *Transportation Research Board*
58. Jahangir, H., H. Tayarani, M. Golkar, A. Ahmadian, M. Tayarani, and **H. Oliver Gao** (2019). Forecasting travel behavior of PEV users: A deep learning approach equipped with a clustering technique based on travel purpose, submitted to *Transportation Research*
59. Tan, Z.G, J. Pender, **H.O. Gao**. (2020). Traffic stability under provision of real-time en-route air pollution information, in preparation
60. David, N.P, A. Rayitsfeld, and **H. O. Gao** (2020). On the effects of the urban heat island on fog trends across the central coastal plain of Israel, submitted to *Atmospheric Research*
61. Pan, S.P, A. Roy, Y. Choi, S. Sun, **H. O. Gao** (2019). The air quality and health impacts of projected long-haul trucks and rail freight transportation in the United States in 2050, *Environment International,* Volume 130, 104922
62. Pan, S.P, A. Roy, Y. Choi, E. Eslami1, S. Thomas, X. Jiang, **H. O. Gao** (2019). Potential impacts of electric vehicles on air quality and health endpoints in the Greater Houston Area in 2040, *Atmospheric Environment*, Volume 207, 38-51
63. Zhang, Y., S. J. Al'Aref, M. TayaraniP, E.Sholle, A. R. Choudhury, **H Oliver Gao**, J. K Min, J. Pathak, J. S. Ancker, (2019). Association between built environment and heart failure progression in an urban retrospective cohort study, accepted in the *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania from November 16-18.
64. Liu, J., **H. O. Gao**, Y. Wang (2019). Incentive game of investor speculation in PPP highway projects based on the government minimum revenue guarantee, *Transportation Research Part A: Policy and Practice 125 (2019)* 20-34.
65. Jahangir, H., Hanif Tayarani, Ali Ahmadian, Masoud Aliakbar Golkar, Jaume Miret, Mohammad Tayarani, **H. Oliver Gao** (2019). Charging demand of plug-in electric vehicles: forecasting travel behavior based on a novel rough artificial neural network approach, *Journal of Cleaner Production,* 229, 1029-1044
66. Liu, J., Ruolan Gao, **H. Oliver Gao**, and Yahui Li (2019). Identifying project factors that affect an investor's escalation of commitment in Public-Private Partnership projects, *Project Management Journal,* Vol. 50(6) 686–698
67. David, N.P, O. Sendik , Y. Rubin , H. Messer , **H.O. Gao** , D. Rostkier-Edelstein, and P. Alpert (2019). Analyzing the ability to reconstruct the moisture field using commercial microwave network data, *Atmspheric Research,* 219, 213-222
68. David, N., **H. O. Gao**, Kumah, K.K., Hoedjes, J., Su, B., Liu, Y. (2019). Microwave communication networks as a sustainable tool of rainfall monitoring for agriculture needs in Africa. In Proc. 16th International Conf. on Environmental Science and Technology, 4-7 September, Rhodes, Greece , 2019.
69. David, N., **H. O. Gao** (2019). Can cell-phone-tower signals help fight Malaria in Africa?. In Proc. 16th International Conf. on Environmental Science and Technology, 4-7 September, Rhodes, Greece , 2019.

70. Rouhani, O[P], R. Geddes, D. Wooseok, **H.O. Gao**, A. Beheshtian, (2018). Revenue-risk-sharing approaches for public-private partnership provision of highway facilities, *Case Studies on Transport Policy*, Volume 6, Issue 4, Pages 439-448
71. Xie Y, Zhao L, Xue J, **Gao HO**, Li H, Jiang R, Qiu X, Zhang S (2018), Methods for defining the scopes and priorities for joint prevention and control of air pollution regions based on datamining technologies, *Journal of Cleaner Production*, 185, 912-921
72. Beheshtiana, A., K.P. Donaghy, R. Geddes, **H. O. Gao** (2018). Climate-adaptive planning for the long-term resilience of transportation energy infrastructure, *Transportation Research Part E*, Volume 113, Pages 99-122
73. Tan, Z.[G], **H.O. Gao**. (2018). Hybrid model predictive control based dynamic pricing of managed lanes with multiple accesses, *Transportation Research B*, Volume 112, Pages 113-131
74. Tan, Z.[G], **H.O. Gao**. (2018). Bayesian Inference for Static Traffic Network Flows with Mobile Sensor Data. Proceedings of 51st Hawaii International Conference on System Sciences.
75. Tan, Z.[G], **H.O. Gao**. (2018). Ventilation Control in Complex Tunnels with Distributed Vents. Proceedings of 2018 American Control Conference (ACC), June 27–29, 2018. Wisconsin Center, Milwaukee, USA.
76. Sayarshad, H.[P], **H. O. Gao** (2018). A scalable non-myopic dynamic dial-a-ride and pricing problem for competitive on-demand mobility systems, *Transportation Research Part C: Emerging Technologies,* Volume 91, Pages 192-208.
77. Heo, J.[P], P. J. Adams, **H.O. Gao**, (2017). Public health costs accounting of inorganic $PM_{2.5}$ pollution in metropolitan areas of the United States using a risk-based source-receptor model, *Environment International* 106 119–126.
78. Amirgholy, M. [P], **H.O. Gao** (2017), Modeling dynamics of congestion in urban networks using macroscopic fundamental diagram: user equilibrium, system optimum, and pricing strategies, *Transportation Research Part B: Methodology,* Volume 104, October 2017, 215-237.
79. Tan, Z.[G], **H.O. Gao** (2017). Optimizing vent configuration for complex urban tunnels considering environmental constraints, *IEEE Transactions on Control Systems Technology,* Volume: 26 Issue: 1, 368-376.
80. Amirgholy, M.[P], M. Shahabi, , **H.O. Gao** (2017). Optimal design of sustainable transit systems in congested urban networks: A macroscopic approach. *Transportation Research Part E: Logistics and Transportation Review* 103 261–285.
81. Zhao, L. [V], J. Wang, **H. O. Gao**, Y. Xie, R. Jiang, Q. Hu, Y. Sun (2017), Evaluation of particulate matter concentration in Shanghai's metro system and strategy for improvement, *Transportation Research Part D: Transport and Environment, 53 (2017) 115–127.*
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Research Grants

PI, Spatiotemporal Distributions of Traffic-related Carbon Emission in Near-road Neighborhoods: Measurements & Mitigation, $14,991, 07/01/2022—06/30/2023, 2022 SJTU-Cornell Joint Seed Fund grant

PI, Redevelopment of *PPS-AQ and PPS-CMP with hosting, maintenance, backup and technical support*, $2,400,414, 5/01/2021-04/30/2026, US DOT, NYSDOT, NYMTC

PI, Center for Transportation, Environment, and Community Health (CTECH), UTC Type: Tier 1 Center, FAST Act Research Priority Area: Preserving the Environment, $9,000,000, 01/01/2017-12/31/2023, US DOT

PI, Advanced Fine Scale Intra-urban Sustainable Transportation - Climate - Air Quality - Health Integrated Assessment Tool for Future Cities, $146,000, 07/01/2019-06/30/2021, ACSF-EDF Joint fund.

Co-PI, Developing a Soil-Based, Promoting pro-environmental engagement among U.S. racial and ethnic minority groups by correcting misperceived environmental norms, 7/1/2017 – 12/31/2019 ($111,663), Atkinson Center for a Sustainable Future, AVF.

Co-PI, *NE AFRI-GFS Project: Enhancing Food Security of Underserved Populations in the Northeast through Sustainable Regional Food Systems*. 01/01/2011—12/31/2017, $295,509 (out of $5,000,000). USDA, (PI: Stephan J. Goetz, The Pennsylvania State University)

PI *, Cyber-Physical Infrastructure and Informatics for Healthy Living in Smart Cities*, 7/1/2014 – 12/31/2017 ($140,000), Atkinson Center for a Sustainable Future

Co-PI, *Optimising Operations and Management of Multi-Modal Urban Transport Systems for Environmental Improvement*. 01/01/2014—12/31/2018, £349,958 (out of £1,467,096). LRF, (PI: Y. E. Ge, Shanghai Maritime University)

PI, *PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support*, $1,420,456, 8/01/2014-07/31/2021, US DOT, NYSDOT, NYMTC

Co-PI, *Quantification and Analysis of the Decisions of Economically and Environmentally Informed Travelers in Urban Networks*. NSF. Amount: $375.000 (PI: Ricardo Daziano). Period: 09/01/2015-08/31/2018.

PI, *Evaluating the Role of Private Investment in Life Cycle Management of New York State's Infrastructure Assets, 3/1/2014—8/31/2015,* $68,901, UTRC2

PI, *Upgrading NYMTC PPS-AQ to MOVES2014,* $250,580 09/01/2013—08/31/2017, US DOT, NYSDOT, NYMTC

Co-PI, *Oil prices and African food security***,** 5/23/2012-7/31/2013, $192,102 Bill & Melinda Gates Foundation on Global Development

Co-PI*, Developing a Soil-Based, Sustainable Specialty Crop Greenhouse Industry in the Northeast*, 8/15/2011 – 8/14/2012 ($39,003), Atkinson Center for a Sustainable Future, AVF.

PI: *Diesel Retrofit Assessment and Development of a Decision Supporting System*, $363k, May 2008-Aug. 2010, sponsored by New York State Department of Transportation (NYSDOT) and US DOT.

PI: *Modeling Air Quality and Energy Impacts of Highway ROW Management*, $172k, May 2008-Sep. 2010, sponsored by New York State Department of Transportation (NYSDOT) and US DOT.

Co-PI (with Miguel Gomez from AEM) *Sustainable Food Supply Chain Study*, $200,000, Aug. 2009-Jul. 2011, sponsored by Cornell University Center for a Sustainable Future.

PI, (CO-PI, Johannes Gehrke from ECS) *Next Generation Grid-Based Transportation Emissions Inventory Estimation Using MOVES and Activity-Based Travel Demand Models*. $695,000, Mar. 2010-May 2012, sponsored by NYMTC through UTRC2 (supplemental agreement in contracting process).

PI (Co-PI: K. Max Zhang in MAE): *Impacts of Clean Diesel Strategies/Technologies on Air Quality and Exposure in New York*, $147,000, Feb. 2008-Mar. 2011, sponsored by New York State Energy Research and Development Authority (NYSERDA).

Co-PI (with Linda Nozick in CEE): *Data Analysis and Statistical Modeling of Patient Outcome and Nurse Staffing*, $25,000, Jan. 2008-Dec. 2008, sponsored by KAISER.

PI: *A Comprehensive Study of the NYS Clean Air School Bus Program: Operations and Potential Improvement for Effective Diesel Emission Reduction*, $15,000, Feb. 2008-May 2009, sponsored by New York State Energy Research and Development Authority (NYSERDA).

Co-PI (with K. Max Zhang in MAE): *Hot-Spot Analysis of Fine Particles ($PM_{2.5}$) for Environmental and Health Impacts Assessment of Transportation Emissions in South Bronx*, $10,000, Jan. 2008-Dec. 2008, sponsored by 2008 UTRC2 research initiative.

Co-PI (PI, Jeff Tester from ChemE), *Verizon / Cornell - Business/Sustainability Initiatives: Fleet management information system*, $40,000, Jun. 2009-May 2010, sponsored by Verizon Foundation.

Co-PI (PI, Jeff Tester from ChemE), *Verizon / Cornell - Business/Sustainability Initiatives: PICS Management & Purchasing*, $40,000, Jun. 2009-May 2010, sponsored by Verizon Foundation.

PI: *The Diesel Retrofit Puzzle Extended: Optimal Fleet Owner Behavior over Multiple Time Periods,* $25,000. Jun. 2008—May 2009, sponsored by 2008 UTRC2 mini-grant for working papers.

Co-PI (with Gene Fitzgerald at MIT) *Biofuels in the United States: An assessment of the Potential for Biomass-To-Liquids Fuel Production Using Existing Sustainable Forest Resources*, Sep. 2007-May 2009, $100,000, sponsored by GE-Cornell Business of Science and Technology Initiative (BSTI).

PI: *Modeling High-Emitting Events of Vehicular Ultrafine PM Number Emissions*, $5,000. Jan. 2009—Dec. 2009, sponsored by 2009 UTRC2 mini-grant for working papers.

PI: *Investment Planning for Optimized Decisions in Cleaning Up the Legacy Diesel Fleet*, $5,000. Jan. 2007—Dec. 2007, sponsored by 2007 UTRC2 mini-grant for working papers.

PI: *Longitudinal Analysis of Fuel Efficiency and Emissions Test Data to Determine the Deterioration in Vehicle Tailpipe Emissions*, $3,000. Jun. 2009—May 2010, sponsored by Faculty Grants for Undergraduate Research, College of Engineering, Cornell University.

PI: *Advancing Transportation Emissions Inventories by Incorporating MOVES and Activity-Based Transportation Models*, $3,000. Jun. 2007—Jun. 2008, sponsored by Faculty Grants for Undergraduate Research, College of Engineering, Cornell University.

PI: *Detailed Modal Analysis of Particulate Emissions From Diesel and Hybrid Diesel Transit Buses*, $3,000. Nov. 2006 – Oct. 2007, sponsored by Faculty Grants for Undergraduate Research, College of Engineering, Cornell University.

PI: *Impacts of Changes in Roadway Networks on Macro-Level Travel Demand and Vehicular Emissions*, summer 2007, $3,000, sponsored by College of Engineering Summer Support of Faculty Undergraduate Research, Cornell University.

PI: *Improving Microscopic Particulate Emission Inventories—Modeling Sources of Variability, High-Emitting Events, and Size Distributions of Vehicular PM Emissions.* $40,000, Sep. 2008-Sep. 2010, sponsored by New York State Energy Research and Development Authority (NYSERDA).
Co-PI (with K Max Zhang in MAE): *Modeling Microenvironment Air Quality in Rochester, NY*, $150,000, Jun. 2008-Mar. 2011, sponsored by New York State Energy Research and Development Authority (NYSERDA).

Software

CU-PPS: Web-based post-processing software integrating activity-based travel demand models with EPA MOVES model for emissions inventory estimation (official software for NYMTC transportation conformity since 2013)

Post-processor software is routinely used by MPOs for estimating mobile-source emission inventory in conformity analysis. In this study we develop a Post Processor Software (PPS) for MOVES, EPA's newly released emission model. The most distinguished feature of the PPS includes its web-based software architecture and its full integration with a Database Management System (DBMS). The web-based architecture allows remote concurrent access to the same software from multiple users, increasing consistency and reducing client resource burden. The use of a DBMS facilitates effective scenario management, better programmability and relational-algebra-based computational optimization techniques. This computational efficiency consequently enables the software to provide a highly-resolved, link or Traffic-Analysis-Zone-level emission inventory to support visualization on GIS systems. The PPS software provides a powerful methodology for the problem of emission inventory post-processing and offers great insights for future development of post-processor software.

Invited Academic Visits and Talks

2019

Plenary speaker: Leveraging High-Resolution Transportation Data for Healthier Cities EDF emerging issues workshop, NYC
Keynote: MANAGING URBAN MOBILITY (AND PARKING) conference by International Parking and Management Institute
Invited talk: Connected Cities with Smart Transportation (C2SMART, A Tier 1 USDOT UTC), Center for Urban Science & Progress (CUSP), Tandon School of Engineering, New York University
Paradigm shift towards smart and healthy cities—systems innovation at the nexus of transportation, climate/environment, and public health, AASHTO
Paradigm shift towards smart and healthy cities—systems innovation at the nexus of transportation, climate/environment, and public health, TRB
Paradigm shift towards smart and healthy cities—systems innovation at the nexus of transportation, climate/environment, and public health, George Mason University
Paradigm shift towards smart and healthy cities—systems innovation at the nexus of transportation, climate/environment, and public health, Georgetown University
Lecture in the Public Health Foundation, Cornell University
Plenary speaker: Paradigm shift towards smart and healthy cities—systems innovation at the nexus of transportation, environment, and public health, The 19th COTA International Conference of Transportation Professionals July 6-8, 2019, Nanjing, China
Sino-US Institute of Supply Chain and Logistics, Shanghai Jiaotong University
Plenary speaker: Systems Integration of Transportation, Environment, and Health
Future Transportation in Urban Transition --Transportation Infrastructure, Environment, and Health, CUTC summer meeting
Planning: Models, Tools, and Insights. Transportation, Air Quality, and Health Symposium, February 18 – 20, 2019, Austin, Texas
Chang'An University
Systems Integration of Transportation, Environment, and Health Planning: Models, Tools, and Insights, Urban China Seminar, MIT, March 12
Future Transportation in Urban Transition--Scalability, Sustainability and Effectiveness of Urban Infrastructure, Environment, and Health Systems, MITRE Lecture Series, March 14, 2019

2018

Future Mobility and Health in Urban Transition—A Systems Approach, Urban Transitions 2018, Integrating urban and transport planning, environment and health for healthier urban living, 25 - 27 November 2018 | Sitges, Barcelona Spain
Overview: Center for Transportation, Environment, and Community Health (CTECH), CTEH annual meeting, Davis CA

2017
Seminar in Regional Science, Planning, and Policy Analysis, Cornell University
Lecture in the Public Health Foundation, Cornell University
Key Note: Center for Transportation, Environment, and Community Health, The 17th COTA International Conference of Transportation Professionals, Transportation Reform and Change: Equity, Inclusiveness, Sharing, and Innovation July 7-9, 2017, Shanghai, China
Sino-US Institute of Supply Chain and Logistics, Shanghai Jiaotong University
Key Note: Integrated Systems Modeling of transportation, air pollution, and public health. The International Conference on Green Intelligent Transportation System and Safety, 01-04 Jul 2017, Changchun, Jilin, China.
Chang'An University
Southwest Jiaotong University
Beijing Institute of Technology

2016
Amazon Supply Chain Optimization Summit
NYC Mayor's Office of Sustainability
Deputy Commissioner's office for Policy, New York City Department of Transportation
Data Science, Uber
Supply Chain and Operations Management, Amzaon
Technology and Policy, Sidewalk Labs
International Symposium on Spatial Optimization and Atmospheric Environmental Improvement in Beijing, Tianjin, and Hebei Region, Shijiazhuang, China.

2015
Complex Systems, Argonne National Lab
Department of Civil and Environmental Engineering, UIUC
School of City and Regional Planning, Tongji University, China
Contemporary China Initiative, Cornell University
Public Policy Center, The University of Iowa
School of Government, Peking University
Food Systems Summit, Cornell University
School of Economics and Management, Fudan University, China
Transportation Research Center, University of Maryland
School of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiaotong Univ.

2014
Institute of Transportation Studies, University of California, Berkeley
Energy Research Center, Beijing Institute of Science and Technology
Department of Chemical Engineering, Cornell University
School of Transportation and Logistics, Beijing University of Aerospace and Aeronautics
Department of Policy Analysis and Management, Cornell University

2013
China Semiconductor Technology International Conference (CSTIC) 2013, Shanghai
Sino-US Global Logistics Institute, Shanghai Jiaotong Univ.
Dalian University of Technology
School of Environmental Science, Peking Univ.

2012
School of Environment, Tsinghua University
School of Civil Engineering, Southwest Jiaotong University
School of Business, Shanghai University
School of Civil Engineering and Institute of Transportation Studies, Shenzhen University
School of Civil Engineering, Dalian University of Technology
School of Transportation, Tongji University

2011
University of California, Davis, Institute of Transportation Studies
Corning Incorporated, Sustainability Initiative
Visiting Professor, ETE (Energy, Transport and Environment), Centrum voor Economische Studiën (C.E.S.), Department of Economics of the Katholieke Universiteit Leuven (K.U.Leuven)
Visiting Professor, Technology, Policy and Management, Delft University of Technology, the Netherland
Visiting Professor, French institute of science and technology for transport, development and networks (IFSTTAR).
IBM T. J. Watson Research Center, Intelligent Energy Management.
Resources for the Future, Transportation and Economics.
University of Washington, Department of Civil and Environmental Engr.
George Mason University, School of Public Policy.
University of Florida, College of Engr.
The Tsinghua-Cornell 2011 international conference on innovative strategies for sustainable enterprise.

2010
Columbia University, the Center of Urban Development.
Cornell University, Environmental Engr. Seminar.
Carnegie Mellon University, Mechanical Engr.
Cornell University, Systems Engr. Ezra's Round Table Seminar.
Virginia Tech, Department of Civil and Environmental Engr.
University of California, Irvine, Department of Civil and Environmental Engr.
Northwestern University, Department of Civil and Environmental Engr.
University of Minnesota, Twin Cities, Department of Civil and Environmental Engr.
The Johns Hopkins University, Department of Geography and Environmental Engr.
University of Maryland, Department of Civil and Environmental Engr.
Purdue University, Department of Civil and Environmental Engr.
Transportation Research Board ADC20 Summer Meeting.

Professional Services

Member: Transportation Research Board (TRB) Research Topics Subcommittee of ADC10 (Transportation and Environment)

Member: TRB Committee ADC20 (Transportation and Air Quality)

Member: TRB Committee AHD60 (Equipment Maintenance)

Member: US EPA's Federal Advisory Committee Act (FACA) MOVES Review Work Group

Member: TRB SHRP2 Capacity Technical Expert Task Group for C04: Improving Understanding of Highway Users and the Factors Affecting Travel Demand, especially Congestion and Pricing

Member: TRB SHRP2 Capacity Technical Expert Task Group for C10A: Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time-Sensitive Network

Member: NYSERDA Emission Inventory Workshop Organizing Committee

Member: NYSDOT GreenLITES academic council

Area Editor(Transportation and Environment): the 10th International Conference of Chinese Transportation Professionals (ICCTP 2010), August 4-8, 2010, Beijing, China

Area Editor(Transportation and Environment): the 11th International Conference of Chinese Transportation Professionals (ICCTP 2011), August 14-17, 2011, Beijing, China

Journal Article and Proposal Review

Environmental Science and Technology
Environmental Pollution
Journal of Aerosol Science
Transportation Research Part A: Policy and Practice
Transportation Research Part C: Emerging Technologies
International Journal of Sustainable Transportation
Journal of Transportation Research Record
Transportation Research Board (TRB) Annual Conference
The 12th World Conference on Transport Research (WCTR)
The 13th International IEEE Annual Conference on Intelligent Transportation Systems
NSF
NSFC
Social Sciences and Humanities Research Council of Canada
Research Grants Council (RGC) of Hong Kong
UTRC2 proposal review
North East Sun Grant Competitive proposal review
MIT Transportation Center proposal review
Cornell Center for Environment Fellowship review

Post-doctorate Advising & Mentoring

Mohammad Tayarani
Postdoctoral Associate, May 2018--
Research: *Integrated transportation, air quality, and health systems modeling*

Mahnaz Nadafianshahamabadi
Postdoctoral Associate, Sep. 2019--
Research: *Advanced Fine Scale Intra-urban Sustainable Transportation - Climate - Air Quality - Health Integrated Assessment Tool for Future Cities*

ShuaiPan
Postdoctoral Associate, Oct. 2017—Oct. 2019, Research: *Integrated infrastructure, air quality, and health systems modeling.* Current: Assist. Prof., Nanjing U. of IST

Hamidreza Sabarshad
Postdoctoral Associate, Sep. 2016--
Research: *Smart multimodal transit based on multi server queue under infinite horizon look ahead*

Mahyar Amirgholy
Postdoctoral Associate, Feb 2016—
Research: *Dynamic modeling of macroscale transportation networks and network-wide design of sustainable transit systems in large urban regions.* Current: Assist. Prof., Kennesaw State U.

Noam David
Postdoctoral Associate, Mar 2015—May 2018
Research: *AQ monitoring using cellular microwave networks,* Current: Founder, AtmosCells

Jinhyok Heo
Postdoctoral Associate, Mar 2015—Jul. 2017
Research: *Public health impacts and accounting of $PM_{2.5}$ pollution.* Current: CARB

Omid Rouhani
Postdoctoral Associate, Feb 2013—Dec. 2015
Research: *Social welfare analysis of alternative investment public-private partnership approaches*
Current: Assistant Professor, Department of Civil Engineering and Applied Mechanics, McGill University

Yiannis Kamarianakis
Postdoctoral Associate, October 2008-August 2010
Research: *Nonlinear models for transient vehicular emissions prediction*
Current: Assistant Professor, School of Mathematics & Statistical Sciences, Arizona State University

Yilin Liu
Postdoctoral Associate, August 2008-August 2010
Research: *Longitudinal data analysis and modeling of vehicle emissions deterioration*
Current: Vice Present, Credit Card Information Management, China Minsheng Banking Corp.ltd, Financial Services

Darrell Sonntag
Postdoctoral Associate, January 2010- August 2010
Research: *Air quality and energy impacts of NYSDOT highway ROW management*
Current: Offic of Transportation and Air Quality (OTAQ), US EPA

M.S./Ph.D. Advising & Mentoring (as Major Advisor)

Darrell Sonntag, M.S./Ph.D., entered fall 2005; graduated with Ph.D. in 12/2009.
Concentration: Transportation Systems Engineering; Minor: Statistics; Air Quality.
Thesis: *Statistical modeling of diesel PM number emissions.*
AAAS Fellow, General Engineer, Office of Transportation and Air Quality (OTAQ), EPA
Timon Stasko, M.S./Ph.D., entered spring 2007; graduated with Ph.D.summer 2011.
US EPA STAR Fellow
Concentration: Transportation Systems Engineering; Minor: Environmental Economics; Systems Engineering.
Thesis: *Mathematical modeling for optimization in green fleet management.*
Current: Acting Manager, Operations Research at State of NY Metropolitan Transportation Authority (MTA)
Xun (Richard) Wang, M.S./Ph.D., entered fall 2008; Ph.D. graduated summer 2013.
Concentration: Transportation Systems Engineering; Minor: Statistics; Operations Research.
Thesis: *Bayesian ranking and selection models for discrete network design problems with uncertainties and multiple environmental objectives.*
Current: Quantitative Modeler, Sentrana (builds, develops, and maintains the underlying mathematical models which drive Sentrana's Precision Sales & Marketing Cloud)
Xi (Alex) He, Ph.D., entered fall 2011; graduated Jan. 2016.
Concentration: Transportation Systems Engineering; Minor: Applied Economics; Operations Research.
Thesis: *Bilateral interactions in two-sided networks—a perspective from matching theory*
Current: Credit Suisse
Bingyan (Brian) Huang, M.S./PhD, entered fall 2011; Ph.D. graduated summer 2016.
Concentration: Transportation Systems Engineering; Minor: Computational Math; Operations Research.
Thesis: *A hierarchical multi-stakeholder principal-agent model for (anti-) corruption in public infrastructure procurement*
Current: China International Capital Corporation Limited
Yan Deng, M.S./PhD, entered fall 2013; Ph.D. expected graduation 2018. Concentration: Transportation Systems Engineering; Minor: Operations Research.
Thesis: *Life-Cycle Asset Planning & Management of Infrastructure Systems: Modeling & Applications*
Current: Cornell
Zhen Tan, PhD, entered fall 2013; expected graduation 2018.
Concentration: Transportation Systems Engineering; Minor: Operations Research; Computational Math.
Thesis: *Optimal learning for data-enabled pricing and management schemes in sustainable transportation networks*
Current: Assistant Professor at Nottingham University Business School China
Ningbo City, Zhejiang, China
Faisal Akaabneh, PhD, entered fall 2015; expected graduation 2020.
Concentration: Systems Engineering; Minor: Operations Research; Applied Economics.
Thesis: *A systems approach to carbon policy and food security in agriculture sytems planning and food supply chain management*
Current: Assistant Professor, School of Business, Washington State University
Ronan Keane, PhD, entered fall 2017; expected graduation 2022.
Concentration: Systems Engineering; Minor: Operations Research; Applied Math.
Thesis: *Applied mathematics and data analytics for emerging transportation systems*
Current: Cornell

Lejian (Leo) He, entered fall 2017; expected graduation 2022.
Concentration: Transportation Systems Engineering; Minor: Operations Research; Air quality
Thesis: *Integrated transportation, air quality, and public health modeling*
Current: Cornell

M.S./Ph.D. Advising & Mentoring (as Major Advisor), continued

Graeme Troxell, PhD, entered spring 2018; expected graduation 2023.
Concentration: Systems Engineering; Minor: Phylosiphy; Applied Econ.
Thesis: *Philosophy and ethics in planning, engineering, and managing cities and urban infrastructure systems for sustainability*
Current: Cornell

Christian Sprague, PhD, entered fall 2018; expected graduation 2023.
Concentration: Systems Engineering; Minor: Applied Econ.; Computer Science
Thesis: *Align Transportation Policy with Residential Location Preference Among Tradeoffs: Choosing Public Transit, Housing Density, or Fuel Tax Revenue*
Current: Cornell

Yuechen (Sophia) Liu, entered fall 2018; expected graduation 2023.
Concentration: Transportation Systems Engineering; Minor: Operations Research; Applied Econ.
Thesis: *Systems modeling for transportation electrification*
Current: Cornell

Xucheng Tang, M.S., graduated May 2019
Thesis: *Optimal network and management of electric vehicle charging stations on university campuses*
Current: Asian Infrastructure Bank

YiChieh Liu, M.S., graduated August 2019
Thesis: *Optimization modeling of infrastructure asset-backed sceurities: application of toll-road projects*
Current: AECOM

Jingyong Yu, M.s., graduated December 2018
Thesis: Considering Financial and Environmental Factors in Airport Efficiency Measurement: A Network DEA Analysis for U.S. Airports
Current: Engineering consulting

Lan Shi, M.S., graduated 8/2016
Thesis: *Speed control of oceon-going containerships considering vessel emissions reduction balanced with carrier cost minimization.*
Current: Environmental consulting

Jun (Eric) Wang, M.S., graduated summer 2016
Thesis: *Equity, Preference and Acceptance of the Car Ownership Policy in Guangzhou, China.*

Zixu Zhou, M.S., graduated 12/2016
Thesis: *Congestion pricing and its impacts on transportation emissions in NYC*
Current: Engineering consulting

Russel Winnas, M.S., graduated 8/2011
Thesis: *Air quality impact assessment of Diesel Engine Retrofitting and Replacement in New York State*
Current: Senior Engineer, AIR Worldwide

Rachel Klein, M.S., graduated 5/2008.
Thesis: S*tatistical modeling of equity and environmental justice in clean air school bus programs.*
Current: Booz Allen Hamilton.

Katabarwa Asaba, M.S., graduated 5/2008.
Thesis: *Sustainable transportation in East Africa: accessibility to public transit in East African Cities.*
Current: Director -- Road and Waterway Transport, Rwanda Utilities Regulatory Agency.

Awards & Honors to Students

Darrell Sonntag won the American Association of Advanced Science (AAAS) Fellowship, 2010.

Timon Stasko won the EPA Science To Achieve Results (STAR) Fellowships For Graduate Environmental Study, 2010.

Darrell Sonntag won the NYSERDA (New York State Energy Research and Development Authority) Ph.D. Fellowship, 2009.

Timon Stasko won the FHWA Dwight David Eisenhower Transportation Fellowship, 2008.

Darrell Sonntag won the FHWA Dwight David Eisenhower Transportation Fellowship, 2007, 2008.

Darrell Sonntag won the New York Metropolitan Planning Council (NYMTC) September 11th Memorial Program Graduate Fellowship, 2008.

Timon H. Stasko won the New York Metropolitan Planning Council (NYMTC) September 11th Memorial Program Graduate Fellowship, 2007.

Katabarwa Asaba won the Cornell Institute for African Development (IAD) Tuition Fellowship, 2007.

M.S./PH.D. Advising & Mentoring (as Committee Member)

Chen Wang, M.S./Ph.D., entered fall 2011; Ph.D. 8/2016.
Concentration: Transportation Systems Engineering; Minor: Applied Economics.
Thesis: *Three essays on the application of discrete choice models with discrete-continuous heterogeneity distributions*
Current: Hedge fund

Arash Beheshtian, Ph.D., entered fall 2011; Ph.D. 8/2016.
Concentration: Regional Science; Minor: Applied Economics
Thesis: *Resilient infrastructure planning*

Wenqi Yi, M.S./Ph.D., entered fall 2011; Ph.D. 8/2016.
Concentration: Transportation Systems Engineering; Systems Engineering.
Thesis: *Optimization of the issuance of evacuation orders under evolving hurricane conditions*

Jazmin Zatarain Salazar, M.S./Ph.D., entered fall 2013; Ph.D. expected summer 2017.
Concentration: Environment and Water Resources; Minor: Environmental Engineering;
Thesis: E*volutionary algorithms for multi-objective surface water reservoir control.*

Yohannes Kesete, M.S./Ph.D., entered fall 2011; Ph.D. 8/2015.
Concentration: Transportation Systems Engineering; Systems Engineering.
Thesis: *Insurer-homeowner interactions in managing natural disaster risk*

Yang Gao, Ph.D., entered fall 2010; Ph.D. 5/2014.
Concentration: Transportation Systems Engineering; Systems Engineering.
Thesis: I*nteractive optimization models for key stakeholders of natural catastrophe insurance system*

Allison Reilly, M.S./Ph.D., entered fall 2005; Ph.D. 2010.
Concentration: Civil Infrastructure Systems; Minor: Transportation.
Thesis: *Optimizing facility use restrictions for the movement of hazardous materials.*

Brian Levine, M.S./Ph.D., entered fall 2005; Ph.D. 2010.
Concentration: Transportation Systems Engineering; Minor: Operations Research.
Thesis: *Optimization of flight frequencies after airport losses.*

Meredith Legg, M.S./Ph.D., entered fall 2005; Ph.D. 2010.
Concentration: Civil Infrastructure Systems; Minor: Transportation.
Thesis: *Resource allocation for regional hazard mitigation.*

Chunying (Anna) Li, M.S./Ph.D., entered fall 2006; Ph.D. expected summer 2011.
Concentration: Civil Infrastructure Systems; Minor: Transportation Systems Engineering; Geotechnical Engineering.
Thesis: *Bi-level optimization for integrated shelter location analysis and transportation planning under hurricane conditions.*

Jun Lee, M.S./Ph.D., entered fall 2006; Ph.D. expected summer 2011.
Concentration: Environmental Economics (in Applied Economics and Management); Minor: Transportation Systems Engineering.
Thesis: *Essays on economic performances and environmental regulation of fresh food supply chain.*

M.S./PH.D. Advising & Mentoring (as Committee Member) continued

Jian Gong, M.S./Ph.D., transferred fall 2016; Ph.D. expected 8/2017.
Concentration: Chemical and Biomolecular Engineering.
Thesis: *Optimal processing network design under uncertainty for producing fuels and value-added bioproducts from microalgae*
Current: Cornell

Maria Asencio, M.S., graduated 5/2010.
Concentration: Statistical Science; Minor: Transportation Systems Engineering.
Thesis: *Modeling particulate matter emissions from heavy duty trucks.*

Presentations at Professional Meetings (paper or abstract peer-reviewed)

1. Keane, R., and **H. O. Gao** (2020). A Formulation of the Relaxation Phenomenon for Lane Changing Dynamics in an Arbitrary Car Following Model, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
2. Baghestani, A., M. Tayarani, M. Allahviranloo, and **H. Oliver Gao** (2020). Evaluating the traffic and emissions impacts of New York City cordon pricing, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
3. Hamid Reza Jahangir, Hanif Tayarani, Masoud AliAkbar Golkar, Ali Ahmadian, Mohammad Tayarani, **H. Oliver Gao** (2020). Forecasting Travel Behavior of PEV Users: A Deep Learning Approach Equipped with a Clustering Technique based on Travel Purpose, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
4. Hamid R. Sayarshad, Xinpi Du, **H. Oliver Gao** (2020). A partially observable Markov decision process for dynamic post-disaster debris clearance problem with a positioning of clearance equipment items strategy, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
5. Mohammad Tayarani, Subhi AlAref, James K.Min, Yiye Zhang, **H. Oliver Gao** (2020). New Evidence on the Role of Environmental and Social Determinants on Mortality in Heart Failure Patients, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
6. Mohammad Tayarani, Shuojia Wang, Razieh Nadafian, Yiye Zhang, **H. Oliver Gao** (2020). The Path Between Place of Living and Mental Health: Transportation and Land Use System Impacts on Postpartum Depression Incidence, Transportation Research Board 99th Annual Meeting, January, Washington D.C.
7. Mahyar Amirgholy, Mehrdad Shahabi, **H. Oliver Gao** (2019). Lane Management and Dynamic Platoon Control in Interregional Corridors with a Mixed Demand of Communicant, Autonomous, and Human-Driven Vehicles, Transportation Research Board 98th Annual Meeting, January, Washington D.C.,
8. David, N.**P**, **H.O. Gao** (2017): Atmospheric monitoring using commercial microwave networks, 15th International Conference on Environmental Science And Technology (CEST), Rhodes, Greece.
9. Akaabneh, F.**G**, **H.O. Gao** (2017). Benders Decomposition for Inventory Routing Problem with perishable products. INFORMS 2017 annual meeting, Houston TX.
10. Amirgholy, M.**P**, **H.O. Gao** (2017). Dynamic congestion tolling and taxing in large urban regions using the network macroscopic fundamental diagram. Transportation Research Board 97th Annual Meeting, 7–11 January, Washington D.C., Paper Number 18-01774.
11. Amirgholy, M.**P**, L. Liu, **H.O. Gao** (2017). Modeling dynamics of congestion in urban networks using the macroscopic fundamental diagram. Transportation Research Board 96th Annual Meeting, 10–14 January, Washington D.C., Paper Number 17-06007.
12. Amirgholy, M.**P**, M. Shahabi, **H.O. Gao** (2017). Designing a sustainable transit system in grid urban networks using the macroscopic fundamental diagram. Transportation Research Board 96th Annual Meeting, 10–14 January, Washington D.C., Paper Number 17-06040.
13. Amirgholy, M.**P**, N. Golshani, C. Schneider, E.J.Gonzales, **H.O. Gao** (2017). An advanced traveler navigation system adapted to route choice preferences of the individual users. Transportation Research Board 96th Annual Meeting, 10–14 January, Washington D.C., Paper Number 17-05826.

14. Akaabneh, F.[G], **H.O. Gao** (2016). Carbon policy for fruit supply chains: Carbon-tax and innovation in storage technologies. CESUN 2016 annual meeting, Washington DC
15. Deng, Y.[G], **H.O. Gao** (2016). Multi-objective infrastructure systems life-cycle optimization using stochastic dynamic programming and evolutionary algorithms, CESUN 2016 annual meeting, Washington DC
16. Rouhani, O.[P]; **H.O. Gao**; Geddes R.(2016). An overview of revenue risk sharing options for public-private partnerships. Presented at the 2016Transportation Research Board, Washington, D.C., USA.
17. Tan, Z.[G], **H.O. Gao** (2016). Road Pricing for Informed Users with Risk Neutral Time Cost and Risk Averse Health Cost. 2016 INFORMS Annual Meeting, Nashville, TN
18. Tan, Z.[G], **H.O. Gao** (2016). Bayesian Ranking and Selection Model for Second-Best Network Pricing Problem. 2016 Winter Simulation Conference, Washington DC
19. Rouhani, O.[P].; **H.O. Gao**; Geddes R.(2016). An overview of revenue risk sharing options for public-private partnerships. Invited contribution to a policy-oriented workshop in the 2016Transportation Research Board, Washington, D.C., USA.
20. Rouhani, O.[P].; Geddes, R.; **H.O. Gao**; Bel, G (2015). Social welfare analysis for alternative investment public-private partnership approaches. Lecture presentation in the 55th Annual Association of Collegiate Schools of Planning (ACSP) conference, Houston, Texas, USA.
21. Heo, J.[P], P. Adams, **H.O. Gao** (2015), The air pollution social cost accounting (APSCA) model, Society of Risk Analysis (SRA) annual meeting, 2015, Arlington, VA, USA
22. Rouhani, O.[P]; Geddes, R.; **H.O. Gao**; Bel, G. (2015). Social welfare analysis for alternative investment public-private partnership approaches. Lecture presentation in the 2nd International Conference on Public-Private Partnership (ICPPP2015), Austin, Texas, USA.
23. Rouhani, O.[P].; Knittel, C.; Niemeier, D.; **H.O. Gao**; Geddes, R (2015). Road supply in London: addition of an ignored social cost. Presentation in the 2015 Transportation Research Board, Washington, D.C., USA.
24. Heo, J.G[P], P. Adams, **H.O. Gao** (2015). CTM-based regression for social costs accounting of individual emission sources to the air quality social costsfor PM2.5 pollution at a receptor location using a chemical transport model and regression., AAAR 34th Annual Conference in Minneapolis, MN, USA, October 12-16, 2015
25. Rouhani, O.[P]; Niemeier, D.; **H.O. Gao**; Geddes, R., (2015). Flat versus spatially variable tolling: A case study in Fresno, California. Presentation in the 2015 Transportation Research Board, Washington, D.C., USA.
26. Rouhani, O.[P]; **H.O. Gao**; Zarei, H.; Beheshtian, A. (2015). Implications of fuel and emissions externalities, spillovers to outside, and temporal variations on zonal congestion pricing schemes. Accepted for presentation in the 2015 Transportation Research Board, Washington, D.C., USA.
27. Rouhani, O.[P]; Muller, J.; Shoemaker, C.; **H.O. Gao**; Wang, E.J. (2015). Surrogate optimization techniques for discrete network design problems. Presentated in the 2015 Transportation Research Board, Washington, D.C., USA.

28. Rouhani, O.[P], **H.O. Gao**, R. Geddes, G. Bel, H. Zarei (2014). Social welfare analysis for alternative investment public-private partnership (IP3) approaches, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
29. Rouhani, O.[P], **H.O. Gao** (2014). An advanced traveler general information system for Fresno, California, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
30. Rouhani, O.[P], **H.O. Gao** (2014). Evaluating various road ownership structures and potential competition on an urban road network, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
31. Huang, B.[G], **H.O. Gao** (2014). Mechanism design approach to modeling, implementing, and evaluating improved investment public-private partnership in a multiple-leader, multiple-follower Stackelberg game, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
32. Wang, X.[G], **H.O. Gao** (2014). Bayesian ranking and selection model for multi-objective discrete network design problem with uncertainties, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
33. Deng, Y.[G], **H.O. Gao**, S. Qian (2014). Life cycle assessment of energy consumption and emissions in the construction of concrete pavement, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
34. Tan, Z.[G], Z. Huang, **H.O. Gao** (2014) Nonlinear programming for optimal ventilation control of multi-point pollutant discharge in urban vehicular tunnels, Transportation Research Board Annual Meeting, January 12-16, 2014. Washington D.C.
35. Rouhani, O.[P], **H.O. Gao**, R. Geddes, G. Bel, H. Zarei (2013). Social welfare analysis for alternative investment public-private partnership (IP3) approaches, INTERNATIONAL WORKSHOP ON "THE DESIRED AND UNDESIRED EFFECTS OF INFRASTRUCTURE AND TRANSPORT POLICY REFORMS", November 28th, 2013, Barcelona, Universitat of Barcelona.
36. Rouhani, O.[P], **H.O. Gao** (2013). Lessons learned from modeling public-private partnership concession projects in Fresno, California, July 2013, Annual Conference of the International Transportation Economics Association 2013, Northwestern University • Evanston, Illinois, USA
37. Rouhani, O.[P], **H.O. Gao** (2013). The general social and private costs of driving, July 2013, Annual Conference of the International Transportation Economics Association 2013, Northwestern University • Evanston, Illinois, USA
38. Wang, X[G], **H.O. Gao** (2013). A Sequential bayesian model for the network design problem with uncertainties, Transportation Research Board Annual Meeting, January 13-17, 2013. Washington D.C.
39. Stasco, T.[G] and **H.O. Gao** (2012). Carsharing in a university setting: impacts on vehicle ownership, parking demand, and mobility in ithaca, NY, Transportation Research Board Annual Meeting, January, 2012. Washington D.C.
40. Wang, X[G], H. Lee, M. Vaz Salles, **H.O. Gao**, J. Gerhke, (2011). Development of post-processing software for the integration of MOVES and NYMTC's activity-based travel demand model, 21th CRC Real World Emissions Workshop, March20-23, San Diego, CA.

41. Kamarianakis, Y.[P], **H.O. Gao**, B. Holmén, (2011). Evaluating the effects of engine operating variables on particle numbers emissions rates using robust regression models, Transportation Research Board Annual Meeting, January 23-26, 2011. Washington D.C.

42. Sonntag, B.D.[G], **H.O. Gao**, Partick Moorse, and M. O'reilly (2011). Fuel usage and emissions from highway mowing activities in upstate New York, Transportation Research Board Annual Meeting, January 23-26, 2011. Washington D.C.

43. Wang, X[G], H. Lee, M. Vaz Salles, **H.O. Gao**, J. Gerhke, (2011). Development of post-processing software for the integration of MOVES and NYMTC's activity-based travel demand model, Transportation Research Board Annual Meeting, January 23-26, 2011. Washington D.C.

44. Stasco, T.[G] and **H.O. Gao** (2010). Green fleet maintenance using retrofits and replacements: an approximate dynamic programming approach, CompSust'10: 2nd International Conference on Computational Sustainability, June 28-30, 2010, Massachusetts Institute of Technology, Cambridge, MA.

45. Liu, Y.[P] and **H.O. Gao** (2010). Multi-level mixed models for longitudinal analysis of vehicle emissions deterioration, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

46. Wang, X[G] and **H O. Gao** (2010). Impact of B20 on particulate matter emissions from heavy-duty trucks -analysis and modeling of size-resolved particle number concentration data, 20th CRC Real World Emissions Workshop, March20-23, San Diego, CA.

47. Wang, X[G] and **H.O. Gao** (2010). Explorative analysis of ultrafine and nano-particle emissions from heavy-duty trucks with high blend bio-diesel (B-80), 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

48. Kamarianakis, Y.[P] and **H.O. Gao** (2010). Accounting for exhaust gas transport dynamics in instantaneous emission models via smooth transition regression, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

49. Sonntag, D[G], **H.O. Gao,** M. O'reilly (2010). Fuel usage and emissions from highway mowing activities in upstate New York, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

50. Sonntag, D[G], **H.O. Gao,** and G. Hooker (2010). Functional data analysis of particle size distributions: application to high-frequency exhaust measurements from a flex-fuel vehicle, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

51. Sonntag, D[G] and **H.O. Gao** (2010). Size-resolved particulate matter emissions from "Veggie" cars fueled on straight vegetable oil in real driving conditions, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

52. Sonntag, D[G], **H.O. Gao**, and B. Holmén (2010). Comparison of particle mass and number emissions from a diesel transit bus across temporal and spatial scales, 20th CRC Real World Emissions Workshop, March 20-23, San Diego, CA.

53. Liu, Y.[P] and **H.O. Gao** (2010). Improving estimates of truck emissions: modeling hourly truck volumes using period-based car volume data, Transportation Research Board Annual Meeting, January 10-14, 2010. Washington D.C.

54. Wang, X.[G] and **H.O. Gao** (2010). Travelers' exposure to fine particle mass (PM2.5) and number concentrations in urban transportation environments in New York City, Transportation Research Board Annual Meeting, January 10-14, 2010. Washington D.C.

55. Kamarianakis, Y.[P] and **H.O. Gao** (2010). Accounting for exhaust gas transport dynamics in instantaneous emission models via smooth transition regression, Transportation Research Board Annual Meeting, January 10-14, 2010. Washington D.C.

56. Sonntag, D.[G], **H.O. Gao**, M. O'reilly (2009). Effect of diesel oxidation catalysts on heavy-duty truck emissions in real driving conditions, 19th CRC Real World Emissions Workshop, March 23-25, 2009. San Diego, CA.

57. Sonntag, D[G], **H.O. Gao**, J. Symonds (2009). Size-resolved particulate matter emissions from NYSDOT snow removal heavy-duty trucks in real-driving conditions, 19th CRC Real World Emissions Workshop, March 20-23, 2009. San Diego, CA.

58. Sonntag, B. D.[G], **H.O. Gao**, B. Holmén, Eric Jackson (2009). Development of a modal particle number emission model from a diesel transit bus, Transportation Research Board Annual Meeting, January 12-16, 2009. Washington D.C.

59. **Gao, H.O**. and Timon Stasko[G] (2009). Diversification in the driveway: mean-variance optimization for greenhouse gas emissions reduction from the next generation of vehicles, Transportation Research Board Annual Meeting, January 12-16, 2009. Washington D.C.

60. **Gao, H.O.** and L. M. Johnson (2008). Methods of analysis for vehicle soak time data, Transportation Research Board Annual Meeting, January 13-16, 2008. Washington D.C.

61. **Gao, H.O.** and A. Bapat [UG] (2008). Diesel particulate matter number emissions: evaluation of existing modal emission modeling approaches, Transportation Research Board Annual Meeting, January 13-16, 2008. Washington D.C.

62. Sonntag, B. D. [G], **H.O. Gao**, B. Holmén (2008). Variability of particle number emissions from conventional and hybrid diesel-electric buses in real-driving conditions, Transportation Research Board Annual Meeting, January 13-16, 2008. Washington D.C.

63. Sonntag, B. D.[G] and **H.O. Gao** (2008). Evaluation of the driving schedule methodology in EPA's MOVES, Transportation Research Board Annual Meeting, January 13-16, 2008. Washington D.C.

64. Sonntag, B. D.[G], **H.O. Gao**, B. Holmén (2007). Modeling on-road particulate matter number emissions from a hybrid diesel-electric bus – an exploratory econometric analysis, Transportation Research Board Annual Meeting, January 23, 2007. Washington D.C.

65. Sonntag, B. D.[G] and **H.O. Gao** (2007). The MOVES from MOBILE: preliminary comparisons of EPA's current and future mobile emissions models, Transportation Research Board Annual Meeting, January 23, 2007. Washington D.C.

66. Sonntag, B. D. [G] and **H.O. Gao** (2006), Traffic data needs and potential sources for EPA's modal emission model – Multi-Scale Motor Vehicle and Equipment Emission System (MOVES), North American Travel Monitoring Exposition and Conference, June 5, 2006. Minneapolis, Minnesota.

67. **Gao, H.O.** and D. Niemeier (2004). Using WIM data to study heavy-duty truck traffic patterns for emission inventory development, North American Travel Monitoring Exhibition and Conference, June 2004, San Diego, CA.

68. **Gao, H.O.** and D. Niemeier (2001). Changes in the California motor vehicle emissions inventory models: EMFAC7G to EMFAC2000, the 94th International Annual Conference of Air & Waste Management Association, June 24—28, 2001. Orlando, Florida.

69. Song, E. and **H. Gao** (1998). A practical method for the deformation analysis of pile-raft foundation, The 5th International Conference on Tall Buildings. Dec.9-11, 1998, Hong Kong.

Technical Reports

1. Tan, Zhen, **H.O. Gao** (2017). Optimal Ventilation Control in Complex Urban Tunnels with Multi-Point Pollutant Discharge, prepared for Center for Transportation, Environment, and Community Health (CTECH), US DOT Transportation Center Program.
2. Channing Arndt, Christopher B. Barrett, Shun Chonabayashi, Brian M. Dillon, **H.O. Gao**, Aurélie Harou, David R. Lee, C. Johannes Lehmann, Miguel I. Gómez, Mujo Moyo and Tanvi Rao (2013), Oil prices and East African food security: *Understanding the links and effects on households*, A final technical report to the Bill & Melinda Gates Foundation.
3. Zhang, K.M., **H.O. Gao**, and P. K. Hopke (2013). *Modeling regional and microenvironmental air quality impact of transportation emissions and clean diesel strategies in NYS*, prepared for New York State Energy Reesarch and Development Authority (NYSERDA).
4. Qureshi, T., M. Nishi, Y. Zhang, and **H.O. Gao** (2010). *Cornell Verizon fleet initiative for sustainable large fleet management*, Prepared for Verizon Foundation.
5. Das, Lita, N. Gupta, T. Stasko, and **H.O. Gao** (2010). *A Genetic Algorithm Approach to DeterminingHub Locations based on Optimal Stock Levels*, Prepared for Verizon Foundation.
6. **Gao, H.O.** and T. Stasko (2010). *Diesel Retrofit Assessment for NYS DOT to Retrofit its Existing Engine Fleet*, Research Project C-07-12, Prepared for NYS DOT and FHWA.
7. **Gao, H.O.** and D. Sonntag (2010). *Modeling Air Quality and Energy Impacts of NYSDOT Highway ROW Management*, Research Project C-07-13, Prepared for NYS DOT and FHWA.
8. Zhang, K.M. and **H.O. Gao**, (2009). *Development of Advanced Modeling Tools for Hotpot Analysis of Transportation Emissions*, Prepared for UTRC2.
9. Nozick, L., **H.O. Gao** (2008). *Nursing Staffing Levels, Patient Outcomes, and Hospital Efficiency – Kaiser NSL Data Analysis*, prepared for KPMCP's Division of Research, Kaiser Permanente Medical Care Program.
10. Britt A. Holmén, Eric D. Jackson, Darrell B. Sonntag, **H.O. Gao** (2008). *Detailed Modal Analysis of Particulate Emissions from Connecticut Transit Buses for Local Emissions Modeling*, Prepared for Connecticut Transit (CTTRANSIT) & Joint Highway Research Advisory Council (JHRAC) of the Connecticut Cooperative Highway Research Program.
11. Britt A. Holmén, Zhong Chen, Aura C. Davila, **H.O. Gao**, Jason Lewandowski, Derek M. Vikara (2005). *Particulate Matter Emissions from HybridEletric Diesel Transit Buses: Fuel and Aftertreatment Effects*. Prepared for Connecticut Transit (CTTRANSIT) & Joint Highway Research Advisory Council (JHRAC) of the Connecticut Cooperative Highway Research Program.
12. **Gao, H.O.** and D. Niemeier (2003). *Hourly Truck Traffic Profiles in Southern California from Weigh-In-Motion Data*, prepared for the California Department of Transportation, UC Davis-Caltrans Air Quality Program.
13. Eisinger, D., T. Kear, **H.O. Gao** (2003) *Project-Level Transportation Conformity, Prepared for the California Department of Transportation Training Class*, UC Davis-Caltrans Air Quality Program, March 2003, San Diego, CA.
14. **Gao, H.O.** and D. Niemeier (2001). *Mobile Emissions Inventories: EMFAC7G and EMFAC2000 Comparison by Air Basins*, prepared for the California Department of Transportation, UC Davis-Caltrans Air Quality Program.

Teaching

CORNELL UNIVERSITY

2005-2006 Academic Year
Special Topics in Transportation: Transportation and Air Quality Modeling and Planning (CEE-764). Fall 2005, 3 cr., 5 graduate students.
Systems Engineering for the Design and Operation of Reliable Systems (SYSEN-530/531(Distance Learning)). Spring 2006, 3 cr. w/o project and 4 cr. with project. 16 on-campus graduate students and 18 distance-learning graduate students.

2006-2007 Academic Year
Faculty Advising for Freshman Engineering Students (ENGRG 150: The Engineering Seminar). Fall 2006, 1 cr., advised 21 freshmen in the College of Engineering.
Systems Engineering for the Design and Operation of Reliable Systems (SYSEN-530/531(Distance Learning)). Spring 2007, 3 cr. w/o project and 4 cr. with project. 14 on-campus graduate students and 19 distance-learning graduate students.

2007-2008 Academic Year
Systems Engineering for the Design and Operation of Reliable Systems (SYSEN-530/531 (Distance Learning)). Fall 2007, 3 cr. w/o project and 4 cr. with project. 10 on-campus graduate students and 12 distance-learning graduate students.
Transportation and Environment/Energy Systems Modeling and Sustainable Development (CEE-465/665). Spring 2008, 3 cr., 9 undergraduate students, 12 graduate students.

2008-2009 Academic Year
Systems Engineering for the Design and Operation of Reliable Systems (SYSEN-5300/5310 (Distance Learning)). Fall 2008, 3 cr. w/o project and 4 cr. with project. 23 on-campus graduate students and 26 distance-learning graduate students.
Transportation and Environment/Energy Systems Modeling and Sustainable Development (CEE-4650/6650). Spring 2009, 3 cr., 10 undergraduate students, 10 graduate students.

2009-2010 Academic Year
Systems Engineering and Six-Sigma for the Design and Operation of Reliable Systems (SYSEN-5300/5310 (Distance Learning)). Fall 2009, 3 cr. 19 on-campus graduate students and 25 distance-learning graduate students.
Six-Sigma Black Belt Project (SYSEN-5320). Fall 2009, 1 cr. 35 graduate students.
Transportation and Environment/Energy Systems Modeling and Sustainable Development (CEE-4650/6650). Spring 2010, 3 cr., 14 undergraduate students, 20 graduate students.

2010-2011 Academic Year
Systems Engineering and Six-Sigma for the Design and Operation of Reliable Systems (SYSEN-5300/5310 (Distance Learning)). Fall 2010, 3 cr. 45 on-campus graduate students and 50 distance-learning graduate students.
Six-Sigma Black Belt Project (SYSEN-5320). Fall 2010, 1 cr. 76 graduate students.

Faculty Advising for Freshman Engineering Students (ENGRG 1050: The Engineering Seminar). Fall 2010, 1 cr., advised 18 freshmen in the College of Engineering.

2011-2020 Academic Years
Systems Engineering and Six-Sigma for the Design and Operation of Reliable Systems (SYSEN-5300/5310 (Distance Learning)). Fall semesters, 100+ students including on-campus graduate students and distance-learning graduate students.
Transportation and Environment/Energy Systems Modeling and Sustainable Development (CEE-4650/6650). Spring semesters, 3 cr., 40+ students.
Faculty Advising for Freshman Engineering Students (ENGRG 1050: The Engineering Seminar).
Ezra Roundtable Systems Seminar Series (SYSEN6100), Fall and Spring
SYSEN 5400/6400: THEORY AND PRACTICE OF SYSTEMS ARCHITECTURE