For this proposal, a highly qualified team has been assembled with two professionals from a university (SUNY Buffalo) and a consulting company (KLD), respectively. To conduct the research task, the research team combines expertise of traffic signal control and railway safety. A brief summary of the qualifications of the two key members of the research team and their relevant research experience is given below.

1) Qing He, Ph.D.
Assistant Professor, Civil, Structural and Environmental Engineering and Industrial and Systems Engineering, SUNY at Buffalo

Dr. Qing He is currently the Stephen Still Assistant Professor in Transportation Engineering and Logistics, at University at Buffalo, The State University of New York. Prior to joining faculty, he worked as a postdoctoral researcher in IBM T J Watson Research Center, where he led Smarter Transportation projects in a research group of Smarter City, from 2010 to 2012. He possesses 7 U.S. patents in traffic forecasting, traffic control, incident prediction, and railway operations. He won 2nd place in TomTom Traffic Prediction Contest of IEEE ICDM (International Conference on Data Mining) in 2010. And he won best paper award in ITS Arizona 19th Annual Conference, September 2012. Recently, he received worldwide IBM Faculty Partnership Award twice in 2012 and 2014, respectively. Dr. He's research is supported by USDOT, FHWA, NYSDOT, NYCDOT, and IBM.

Dr. He has extensive research experience in the modeling, development, and real-world applications of traffic signal control and signal priority control. So far he has published 10 research papers related to signal optimization and won one best paper award. One of Dr. He’s major contributions is in developing innovative multi-modal traffic signal control model and strategies that considering multiple travel modes in a vehicle-to-infrastructure communications environment (He et al. 2012, He et al 2014). In this work, he answered the question how much penetration of Connected Vehicles is required to outperform traditional traffic signal control systems equipped with only fixed point detectors. In his Ph.D. dissertation, He developed first Arizona
Emergency-IntelliDriveSM system (He 2010), which leads to the Arizona MMITTS test bed.

Dr. He also has more than 10 years of experiences in railway safety and risk analysis. When he was a researcher in IBM T J Watson Research Center, he was leading a railway safety project with a Class I railroad. The project results in 3 U.S. patents, 4 journal papers and 4 conference papers. According to above expertise stated, Dr. He is a perfect candidate to address safety and mobility problems in traffic signal control near railway highway grade crossing.

2) Wuping Xin, Ph.D., P.E.
Chief Technology Officer (CTO), KLD Engineering, P.C.

Dr. Wuping Xin is the CTO of KLD Engineering, P.C., a consulting firm well known for its early pioneering work of developing NETSIM traffic simulation software, FHWA UTCS 3rd Generation initiatives, and the recent adaptive traffic signal system ACDSS deployed in Midtown Manhattan, New York City. Dr. Xin’s areas of expertise include adaptive traffic control, big-data mining, analytics, and management for traffic control and traffic management; traffic modelling, simulation, and analysis. He has extensive experience in the development and implementation of real-life adaptive control systems and high-performance big-data management systems for real-time traffic and transportation application. Dr. Xin has detailed knowledge at the implementation levels of the relevant ITS protocols including NEMA-TS/NTCIP/SNMP/SDLC. He has more than 20 years of experience of software and hardware programming, and is highly skilled in C++/C, Delphi and binary level and operating system kernel-level software and hardware integration. Dr. Xin is an expert of VISSIM and Aimsun simulators with extensive insights of the tools’ inner workings, APIs/SDKs customization, and modelling details. He is the chief architect of the ACDSS adaptive control system as part of the active traffic management and congestion mitigation efforts of more than 300 hundred intersections in Midtown Manhattan, New York City. The system has been deployed in other states including California, Kansas, Missouri, and overseas in Saudi Arabia. He has been heavily involved in UTRC Connected Vehicle research collaborating with NYU researchers. Dr. Xin is a P.E. in Electrical and Computer Engineering and an FCC-licensed HAM radio operator.
Qing He, State University of New York, Buffalo – Upper Mid-Level Prof/Tech Staff

Basis for Selection:
Dr. He has a Ph.D. in Systems & Industrial Engineering and has 9 years of progressively responsible experience. He has professional interests and experience in Highway Transportation: Transportation Management and Control, Traffic Signal Control and Priority Control, Connected Vehicles and Automated Vehicles, Traffic Prediction, and Transportation Analytics.


Dr. He received an IBM Faculty Partnership Award (worldwide), 2014 and SUNY Sustainability Small Grant Competition Winner, 2013.

Relevant Project Experience:
2015-Present, US Department of Transportation (USDOT) through Region 2 University Transportation Research Center and Heterogeneous Regional Signal Control, Principle Investigator (PI): “Heterogeneous Regional Signal Control”, Total cost $22,501

2014-Present, IBM and New Order Fulfillment Schemes under Social Commerce, PI: Total cost $26,000.

UB TransInfo University Transportation Center and Mining Transportation Information from Social Media for Planned and Unplanned Events, PI: Total cost $62,025.

USDOT and Tier 1 University Transportation Research Center: UB’s Transportation Informatics University Transportation Center, Co-PI: Total cost $2,816,300.


Federal Highway Administration (FHWA) through New York State Department of Transportation and National Summer Transportation Institute Program, PI: Total cost $16,597.

USDOT through Region 2 University Transportation Research Center and Smarter Multi-modal Traffic Signal Control with Both Floating Sensor Network and Fixed Sensor Network, PI: Total cost $160,000 including university match fund $80,000.

FHWA and National Summer Transportation Institute Program, PI: Total cost $14,935.

IBM and E-tailing Supply Chain Management, PI: Total cost $30,000

SUNY RF Sustainability Fund and Daily Traffic Control Agency Deployment for Large Scale Planned Special Events: Proof of Concept, PI: Total cost $4,069.

UB TCIE Project from Williamsville Central School District (WCSD) and School District Transportation Operations Management Efficiency Program, Co-PI: Total cost $77,949.

Representative Publications and Presentations:
Has 7 pending patents, 1 peer reviewed book chapters, 10 Peer reviewed Journal Publications, 5 Submitted Manuscripts, 8 working papers, 18 Peer Reviewed Conference Proceedings, 3 Other publications, 10 Invited Research Seminars, and 37 conference Presentations


Relevant Employment History

<table>
<thead>
<tr>
<th>Organization</th>
<th>Position(s)</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>University at Buffalo, The State University of New York</td>
<td>Assistant Professor</td>
<td>2012-Present</td>
</tr>
<tr>
<td>Business Analytics and Mathematical Sciences, IBM T J Watson Research Center</td>
<td>Postdoctoral Researcher</td>
<td>2010-2012</td>
</tr>
<tr>
<td>The University of Arizona</td>
<td>Graduate Student Assistant</td>
<td>2006-2010</td>
</tr>
</tbody>
</table>
**WUPING XIN, PH.D., P.E.**

**KLD ENGINEERING, P.C.**

**EXPERTISE HIGHLIGHTS**
- Adaptive traffic signal control
- Big-data mining, analytics and management for ITS applications
- Relational database, NoSQL, and document database
- Traffic modelling, simulation and analysis
- ITS Software and System Engineering

**YEARS OF EXPERIENCE**
18

**EDUCATION**
- PhD, Traffic Engineering, New York University, USA
- M.Sc., Civil Engineering, University of Minnesota at Twin Cities, USA
- M.Sc., System Engineering, South China University of Technology, China
- B.Eng., Automatic Control, Harbin Engineering University, China

**Experience**

**KLD Engineering, P.C., 2014–Present**, Chief Technology Officer. Leading the continued R&D efforts on next-generation adaptive signal control technology, high-performance real-time big-data solutions for traffic management and control, and real-time simulation with hardware-in-the-loop and connected vehicle infrastructure.


Architect of the adaptive control system deployed in New York City. Lead developer of the core DTA model of the emergency evacuation technology DYNEV-II employed in the Evacuation Time Estimates (ETE) studies for more than 75% nuclear reactors throughout the U.S.


Developed various simulation models using VISSIM and Aimsun APIs for customized microscopic driver behavior modelling and advanced traffic signal control. Developed various software solutions for ITS applications.

**Civil Engineering Department, University of Minnesota, 2001-2006**, Research Assistant

Developed methodology and software tools to collect, analyze and validate vehicle trajectories for collusive-inclusive car-following behavior modelling. Research on collision-inclusive car-following behavior to replicate real-life rear-ends collisions for improved safety-oriented microscopic traffic modelling and simulation. Design and evaluation of Minnesota’s Stratified Ramp Control strategy.

**Summary**

Dr. Wuping Xin is the CTO of KLD Engineering, P.C. His areas of expertise include adaptive traffic control; big-data mining, analytics, and management for traffic control and traffic management; traffic modelling, simulation, and analysis. He has extensive experience in the development and implementation of real-life adaptive control systems and high-performance big-data management systems for real-time traffic and transportation application. Dr. Xin has detailed knowledge in the relevant ITS protocols including NEMA-TS/NTCIP/SNMP/SDLC. He has more than 20 years of experience of software and hardware programming, and is highly skilled in C++/C, Delphi and binary level software system integration. Dr. Xin is an expert of VISSIM and Aimsun simulators with extensive insights of the tools’ inner workings, APIs/SDKs customization, and modelling details. He is the chief architect of the ACDSS adaptive control system as part of the active traffic management and congestion mitigation efforts in Midtown Manhattan, New York City. The system, now integrated as the adaptive module of TransSuite TCS, has been deployed in other states and overseas. He has been heavily involved in UTRC Connected Vehicle research collaborating with NYU researchers. Dr. Xin is a P.E. in Electrical and Computer Engineering and an FCC-licensed HAM radio operator.
Representative Publications and Presentations


August 18, 2015

Statement of Compliance

We, Qing He, Assistant Professor at SUNY Buffalo, and Wuping Xin, CTO at KLD, do hereby state that we will comply with the terms of NCHRP contract if the proposal is funded.

Qing He, PhD
Assistant Professor
University at Buffalo, The State University of New York

Wuping Xin, PhD, P.E.
CTO
KLD Engineering, P.C.