IEEE Open Journal of Intelligent Transportation Systems
Editor in Chief (Prof. Dr. Ir Bart van Arem)

Special Issue on: "Machine Learning and Deep Learning for Transportation"

Call for papers

In recent years, machine learning techniques (e.g. support vector machine (SVM), decision tree, random forest, etc.) and deep learning techniques (e.g. convolutional neural network (CNN), recurrent neural network (RNN), long-short term memory (LSTM), etc.) have been popularly applied into image recognition and time-series inferences for intelligent transportation systems (ITS). For instance, advanced driver assistance systems and autonomous cars have been developed based on machine learning and deep learning techniques to perform forward collision warning, blind spot monitoring, lane departure warning systems, traffic sign recognition, traffic safety, infrastructure management and congestion, and so on. Autonomous vehicles can share their detected information (e.g., traffic signs, collision events, etc.) with other vehicles via vehicular communication systems (e.g., dedicated short range communication (DSRC), vehicular ad hoc networks (VANETs), long term evolution (LTE), and the 5th generation mobile networks) for cooperation. However, the performance and efficiency of these techniques are big challenges for performing real-time applications.

Therefore, several optimization techniques (e.g. gradient descent algorithm, Adam optimization algorithm, particle swarm optimization algorithm, etc.) have been proposed to support deep learning algorithms in finding faster solutions. For example, the gradient descent method is one of the most popular optimization techniques to quickly seek the optimized weight sets and filters of CNN for image recognition. The ITS applications based on these image recognition techniques (e.g., autonomous cars, augmented reality navigation systems, etc.) have gained increasing attention, and the hybrid approaches typical of mathematics for engineering and computer science (e.g. machine learning, deep learning, and optimization techniques) can be investigated and developed to support a variety of ITS applications.

The aim of this Special Issue is to focus on both original research and review articles on various disciplines of ITS applications, including particularly machine learning, deep learning and optimization techniques for ITS time-series data analyses, ITS spatio-temporal data analyses, advanced traffic management systems, advanced traveler information systems,

commercial vehicle operation systems, advanced vehicle control and safety systems, advanced public transportation services, emergency management services, electronic payment services, advanced information management services, information management services, vulnerable individual protection services, etc.

Papers are expected from invited experts (IEEE fellows and IET fellows), extended versions of contributions to international conferences and workshops (e.g., WWW'21 Workshop, DASFAA 2021 Workshop, IEEE ICCE-TW 2021 Special Session, IEEE/IFIP DSN 2021 Workshop, and others).

Potential topics include, but are not limited to, the following:
- Machine learning, deep learning, and optimization techniques for ITS time-series and spatio-temporal data analyses
- Machine learning, deep learning, and optimization techniques for advanced traffic management and safety, traveler information, commercial vehicle operation, advanced vehicle control and safety, and advanced public transportation systems
- Machine learning, deep learning, and optimization techniques for emergency management, electronic payment, advanced information management, and vulnerable individual protection services
- Machine learning, deep learning, and optimization techniques for image recognition
- Applications and techniques for image recognition based on machine learning and deep learning for ITS
- Applications and techniques for autonomous cars and ships based on machine learning and deep learning
- Machine learning, deep learning and optimization techniques for quality of service in VANET
- Machine learning, deep learning, and optimization techniques for infrastructure management and congestion

Submission
Submission from February 1, 2020 to March 31 2022. Accepted papers will be published upon acceptance as early access. Paper submission at:
https://mc.manuscriptcentral.com/oj-its (choose manuscript type MLDLT)

Guest editors
- Prof. Chi-Hua Chen, Fuzhou University, China
- Prof. Yi-Bing Lin, National Chiao Tung University, Taiwan
- Prof. Xianbiao Hu, Missouri University of Science and Technology, United States

- Prof. Kuo-Ming Chao, Coventry University, United Kingdom

Guest area editors
- **Road transportation**: Prof. Xin Fu, Chang'an University, China
- **Marine transportation**: Prof. Mingyang Pan, Dalian Maritime University, China
- **Rail transportation**: Dr. Shixiong Jiang, Fuzhou University, China
- **Image recognition**: Prof. Cheng Shi, Xi'an University of Technology, China
- **Optimization**: Prof. Feng-Jang Hwang, University of Technology Sydney, Australia

Guest editors' biographies

Prof. Chi-Hua Chen

Chi-Hua Chen (Senior Member, IEEE) received his Ph.D. degree in information management from National Chiao Tung University in 2013. He was a research fellow at Chunghwa Telecom from 2014 to 2018. He has been a full professor with the College of Mathematics and Computer Science at Fuzhou University from 2018. He has also served as a consultant for IF-Tek Inc. from 2019 and the director for Key Laboratory of Intelligent Metro of Universities in Fujian from 2020. He has published over 300 journal articles, conference articles, and patents. His contributions were published in *IEEE Internet of Things Journal*, *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences*, *IEICE Transactions on Information and Systems*, *WWW'20*, *SIGIR 2020*, and so on. Some of his publications have been recognised as **highly cited papers** on Web of Science using data from Essential Science Indicators. He serves as an editor for several international journals (e.g., *IEEE Access*, *IEICE Transactions on Information and Systems*, *Scientific Reports (one of Nature research journals)*, *PLOS ONE*, and so on). He also serves as a chair for several international conferences (e.g., *WWW'21 Workshop*, *DASFAA 2021 Workshop*, *IEEE APNOMS 2020*, *IEEE ICC 2020*, *IEEE BIBM 2020 Workshop*, *IEEE TrustCom 2020 Workshop*, *IEEE BigData 2020 Workshop*, and so on). His research interests include the Internet of things, intelligent transportation systems, and machine learning.

Prof. Yi-Bing Lin

Yi-Bing Lin (Fellow, IEEE) received the Ph.D. degree from the University of Washington, USA, in 1990. He joined National Chiao Tung University (NCTU), Taiwan, where he became a Lifetime Chair Professor, in 2010, and the Vice President, in 2011. From 2014 to 2016, he was a Deputy Minister with the Ministry of Science and Technology, Taiwan. Since 2016, he has been a coauthor of the books Wireless and Mobile Network Architecture (Wiley, 2001), Wireless and Mobile All-IP Networks (John Wiley, 2005), and Charging for Mobile All-IP Telecommunications (Wiley, 2008). From 1990 to 1995, Yi-Bing Lin was a Research

Scientist with Bellcore. He was a member of board of directors for Chunghwa Telecom from 2008 to 2018. He has also been a member of board of directors for Information Technology Total Services Co., Ltd. since 2018. Dr. Lin is a major funder of AgriTalk Inc., a smart agriculture solution provider (2018). The company's product has won CES (Consumer Electronics Show) Innovation awards showcase, Las Vegas, USA, 2020. He is an AAAS Fellow, ACM Fellow, and IET Fellow.

Prof. Xianbiao Hu

Xianbiao Hu is an assistant professor at Missouri University of Science and Technology (Missouri S&T, formerly University of Missouri at Rolla). Prior to joining Missouri S&T, he was a founding team member, Director of R&D, and General Manager of the Chinese holding subsidiary at Metropia Inc. His research focuses in the area of smart transportation systems, big data analytics, travel behavior and insurance telematics, and transportation system modeling and simulation. He also served the role of affiliate professor at the University of Arizona. He is currently serving as the editor board member for the *International Journal of Transportation Science and Technology*, and reviewer for over ten academic journals and conferences. He is the faculty advisor of Missouri S&T Institute of Transportation Engineers student chapter, and member of TRB Committee on the Impacts of Information and Communication Technologies on Travel Choices. He has won multiple awards including the Excellent Paper Award at 2018 World Transport Convention.

Prof. Kuo-Ming Chao

Kuo-Ming Chao obtained his MSc and PhD degrees from Sunderland University, UK in 1993 and 1997 respectively. From 1997, he worked at Engineering Design Centre in Newcastle-upon-Tyne University as a research associate for more than 3 years before he joined Coventry University as a senior lecturer in 2000. Between 2007 and 2008, he joined the British Telecom Research Lab as a short term research fellow. His research interests include the areas of intelligent agents, service-oriented computing, cloud computing and big data etc. as well as their applications such as energy efficiency management and green manufacturing etc.   With over 200 refereed publications in books, journals, conference proceedings he is also a co-founder and editor-in-chief of *Service-Oriented Computing and Applications*: A Springer Journal to promote Service-Oriented Computing. He is a member of editorial boards for numerous international journals. In addition he is involved in several EU-funded projects as coordinator or work package leader. He also serves international conferences by taking different responsibilities such as general chair for 10th-15th IEEE ICEBE, 2010 IEEE conference CEC, programme chair for 9th ICEBE, 2009 CEC and 2005 CSCWD, Track Chair for 2010-2012 AINA and others.