Keynote

Development of Active Safety Assurance Technologies for Rail Intelligent Transportation System in China

Yong Qin
State Key laboratory of Rail Traffic Control and Safety
Beijing Jiaotong University
Beijing, China

Abstract: China has built the largest scale of high-speed railway in the world in recent years and will continuously invest in rail infrastructure for intra-city and inter-city transportation. For improving the efficiency and safety of these large-scale of rail network operation, rail intelligent transportation system (RITS) based on the advanced information and knowledge engineering techniques is a good solution. In this talk, the definition, architecture and key techniques of RITS are introduced. Because the railway operation safety is the most important field in RITS and focus on accident preventive ability now, many new active safety assurance technologies have been studied and applied into the practice of China railway. The intelligent fault diagnosis method based on safety region and support vector machine(SVM) algorithm is introduced to the online monitoring of the train operation status. The intelligent optimization method based on fuzzy particle swarm optimization algorithm is produced to the train traffic plan adjustment. And the risk assessment method based on fuzzy-TOPSIS is introduced to the rail network real time risk analysis. The relative China railway applications will be demonstrated in this talk.

About the Speaker

Yong Qin is the Dr., Professor of State Key laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University. He also is the vice director of Beijing Research Center of Urban Traffic Information Intelligent Sensing and Service Technologies, the vice dean and secretary general of Rail Transportation Electro-technical Committee of China Electro-technical Society, the vice dean and secretary general of Rail Intelligent Transportation Systems Committee of China Intelligent Transportation Systems Society, and the member of IEEE. His research interests are in the area of intelligent transportation systems, railway operation safety and reliability, rail network management and traffic model. He has authored or coauthored more than 100 publication papers and 5 books, has 10 patents granted, also won 7 science and technology progress award of ministry.