An efficient and safe transportation system is essential for the function and prosperity of modern society. Nowadays, we have benefited from the rapid development of the transportation industry. However, we also have to suffer from serious problems in transportation. Therefore, many researchers are seeking solutions to make a transportation system more efficient and improve the operations by using new technologies and new methodologies. The analyzing, testing, modeling, and simulating of a transportation system and the state-of-the-art technologies will collectively improve the accidents, congestion, and pollution emissions problem of the transportation system. This special issue aims at understanding the discrete state modeling the dynamic changes of the transportation system and finding a more reliable compensating approach to enhance the safety and efficiency of the transportation system. We believe that the papers in the special issue could be a representative study in the field of intelligent transportation system and help for a heuristic understanding of the current development in the field of transportation safety.