Vehicular Ad hoc Networks (VANETs) are among the most promising technology enablers to realize current and future Intelligent Transportation Systems (ITS). Nowadays, ITS have provided unquestioned evidences for improving road safety, sustainability and efficient road traffic and vehicle management. Indeed, the lives of people who travel along roads on a regular basis are directly affected by traffic management and safety. Since the number of on-road vehicles is growing fast, the number of accidents and fatalities on the roads is expected to increase steadily over the next years. VANETs provide communication services among close vehicles (V2V) and roadside infrastructure (V2I) through dedicated short-range communication (DSRC). It is by virtue of these communication services that roads have become safer and traffic flows thoroughly monitored and understood.

As a consequence of their capital role in road safety, vehicular communication networks are gaining the attention of academic, government, and industry sectors. A vehicular network has the potential to contribute to safer and more efficient transportation systems by providing a diversity of services and timely information to drivers, passengers and authorities. Routing between a source vehicle and a destination vehicle is also an important topic in VANETs. Routing in VANETs establish an appropriate route between vehicles without relying on fixed communication infrastructures. However, due to the characteristics of these networks such as self-organization, high vehicular mobility, dynamic topology changes, short-term connections and limited bandwidth, designing an effective routing protocol remains a challenging topic that requires e.g. predicting the trajectory of vehicles to establish connections of high bandwidth albeit narrow directionality. Another challenge in VANETs is securing communication between vehicles and traffic and vehicle management. Due to lack of infrastructure, open nature, the high mobility of vehicles and data privacy regulatory constraints, security is one of the most considerable topics in these networks. Deep Learning algorithms can be a suitable approach for routing and security issues, sustainable traffic and vehicle management in VANETs. The effectiveness of Deep Learning relies on the ability of these models to effectively handle the dynamics of vehicular networks, providing the algorithmic means to learn the patterns within the information flows exchanged from/to vehicles, infrastructure and pedestrians. Specific topics related to Deep Learning with clear connections to VANETs include transfer learning, online learning and federated learning, among many others.

This special issue aims at providing platform for researchers and practitioners to exchange and publish the latest research trends and results on intelligent and sustainable traffic & vehicle management in VANETs using Artificial Intelligence approaches, with an emphasis on various Deep Learning based strategies such as Computer Vision, etc. The main objective of this special issue is to encourage researchers to explore key concepts of AI and Deep Learning that can be utilized for intelligent and sustainable traffic & vehicle management in VANETs. The topics relevant to this special issue include, but are not limited to:

- Artificial intelligence for Smart traffic management in VANETs
- AI for Enhancing location-based services and navigation in VANETs
- AI and Deep Learning for Internet of Vehicles and 5G
- Artificial intelligence for traffic & vehicle management in VANETs
• AI-enabled Big data management in VANETs and Internet of Vehicles
• Artificial intelligence for Social Internet of Vehicles and traffic management
• New Deep Learning paradigms and their application to VANETs:
  o Federated Learning
  o Transfer Learning and Domain Adaptation
  o Adversarial Machine Learning
  o Explainability of Deep Learning models
  o Deep Reinforcement Learning
• Cloud-fog based Internet of Vehicles for intelligent traffic management using AI
• AI-enabled Software design for VANETs and Internet of Vehicles
• Artificial intelligence for Safety, security and privacy in VANETs
• Cloud and edge computing for intelligent and sustainable traffic & vehicle management in VANETs
• Evolutionary computation and Swarm Intelligence approaches for sustainable traffic & vehicle management in VANETs
• AI-enabled mobile computing for traffic & vehicle management in VANETs
• AI based sustainable smart vehicles and traffic management
• AI based cooperative applications of IoV and UAVs
• Internet of Vehicles for future Internet design
• Blockchain based traffic & vehicle management in VANETs
• Protocols, architectures and applications for traffic & vehicle management in VANETs
• Lightweight protocols for sustainable traffic & vehicle management in VANETs
• AI with Image Processing for effective vehicle management in VANETs
• Computer Vision over edge devices with applications to VANETs

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