



5<sup>th</sup> Global Power, Energy and Communication Conference

Cappadocia/TURKIYE

June 14-16, 2023

## **Special Session on Paradigms for communications and Internet of Things for future connected vehicles**

Outcome of the session:

- Faculty and research scholars those who are working in the field of vehicular communications and automobile connectivity will be benefited.
- Latest research based technical articles would be published consisting the concepts of emerging trends in the communications and networking of vehicles.
- Lead editor, editors and reviewers would also be benefited to handle the reviewing process of the submitted manuscript.

Future connected vehicles enhance a variety of features such as safety, infotainment, mobility, and environmental applications over emerging radio access technologies, standards, and networks. International transport system (ITS) is standardizing various protocol stacks for data networks and security of autonomous vehicles, which is attracting great interest from academia, industry, and entrepreneurs. Present ITS technology provides vehicles to communicate with their surroundings, which is just a fraction of future technologies. As per the Society of Automotive Engineers (SAE), six levels (level 0 to level5) of automation are defined, and currently, level 2 automation is available, and levels 3 to level 5 are in the research phase. The connected vehicle technology can make future ITS more productive, and efficient and serve regulatory and consumer demand for safety, infotainment, and other services. Present radio access technologies available in different regions are Wi-Fi, LTE, DSRC/IEEE 802.11p, and the next-generation technologies which include visible light communication (VLC), millimeter wave (mmWave), Cellular vehicle to everything communication, and mobile communication technology such as 5G and 6G play's a significant role in future vehicles. Present mobile ad-hoc networks provide spontaneous one-hop and multi-hop inter-vehicular communication between vehicles and roadside units which can be extended for other ways of communication and to extend the range of communications. Most of the vehicles are embedded with in-vehicle 3G or 4G/LTE powered wireless access for internet under vehicular radio access technology (RAT) standards and in the future can be connected with a cruise control mechanism. There are many challenges associated with RATs to fulfill the unique vehicular communication requirements such as highly available and reliable performance (i.e., always best connected) in high mobility, varying density, and non-line-of-sight environments.

The vehicular network is evolving with the traditional networks, wireless access for the vehicular environment (WAVE), Cooperative ITS (C-ITS) protocol stacks, Internet-of-Vehicle (IoV), Software Defined Vehicular Network (SDVN), Vehicular Named Data Network (VNDN), and Mobility-First architecture. These new emerging architectures and technologies offer great opportunities for researchers to contribute to this domain and take it to new heights.

Peer review process: Submitted papers should present original, unpublished work, relevant to one of the topics of the Special Issue. All submitted papers will be evaluated based on relevance, the significance of contribution, technical quality, scholarship, and quality of presentation, by at least three independent reviewers.

**Topics of interest include, but are not limited to:**

- Identifying internal & external attacks/threats and security vulnerabilities of Connected-and-Automated Vehicles (CAV) and their impacts.
- Developing approach to secure Cyber Physical Systems (CPS) of CAVs that includes ECU, CAN bus, FlexRay, Telematics, etc.
- Various security services to aforementioned vehicular network architectures.
- Developing intrusion detection system to detect the attacks that targets in-vehicle system security gaps.
- Developing system to recognize the abnormal activity: malfunctioned component or malicious activity.
- Techniques of preserving location privacy of the vehicles in the VANETs.
- Designing approach to detect the misbehaving vehicles in the vehicular network, its nature of misbehavior (malicious, selfish or compromised) and mechanism to prevent it.
- Inter and Intra vehicular communications
- Infrastructure and infrastructure-less architectures and protocols for prompt response
- Interoperability (radio spectrum, wireless technologies, network architectures)
- Safety related communications in V2X (Vehicle to everything) environments
- Synchronization problems and remedies in V2X.
- Wireless technologies for advanced applications (e.g., platooning, intersection management, remote driving)
- Crowd sensing vehicular networks
- Hybrid wireless communications for connected vehicles
- mmWave, visible light communications, and other technologies applied to connection vehicles

**Organizer(s):**

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**Deadlines of the special session:**

Full paper submission (maximum 6 pages):	<b>April 25, 2023</b>
Notification of acceptance:	<b>April 30, 2023</b>
Final submissions due:	<b>May 14, 2023</b>

All the instructions for paper submission are included at the conference website.

<https://gpecom.org/2023/guidelines/>

**Guest Editor information including title, Institutional email address, affiliation, fields of interest, and institutional home page.**

**Dr. Praveen Malik** is a Professor in the School of Electronics and Electrical Engineering, Lovely Professional University, Phagwara, Punjab, India. He received his Ph.D. in with a specialization in Wireless Communication and Antenna Design. He has authored or coauthored more than 50 technical research papers published in leading journals and conferences from the IEEE, Elsevier, Springer, Wiley, etc. Some of his research findings are published in top-cited journals. He has also published ten edited/authored books with International Publishers. He has guided many students leading to M.E./M.Tech and guiding students leading to Ph.D. He is an Associate Editor of different Journals. His current interest includes Microstrip Antenna Design, MIMO, Vehicular Communication, and IoT. He was invited as Guest Editors/Editorial Board Members of many International Journals, invited for keynote Speaker in many International Conferences held in Asia and invited as Program Chair, Publications Chair, Publicity Chair, and Session Chair in many International Conferences. He has been granted two design patents and a few are in pipelines.

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