# Recent Papers on V2X (Vehicle-to-Everything) Technology (2023-2024)

## A RIS-Based Vehicle DOA Estimation Method With Integrated Sensing and Communication System

Authors: Z. Chen, P. Chen, Z. Guo, Y. Zhang, and X. Wang

Published in: IEEE Transactions on Intelligent Transportation Systems, June 2024

Abstract: This paper introduces a method for vehicle direction-of-arrival (DOA) estimation utilizing Reconfigurable Intelligent Surfaces (RIS) within an Integrated Sensing and Communication (ISAC) system. The approach enhances DOA estimation accuracy by leveraging RIS to control the propagation environment, facilitating improved vehicle localization and tracking in intelligent transportation systems.

Link: https://github.com/Xuezhenggdut/V2X\_ISAC\_papers

## Mutual Information-Based Integrated Sensing and Communications: A WMMSE Framework

Authors: Y. Peng et al.

Published in: IEEE Wireless Communications Letters, 2024

Abstract: The study presents a Weighted Minimum Mean Square Error (WMMSE) framework for Integrated Sensing and Communication (ISAC) systems, focusing on maximizing mutual information. The proposed method optimizes resource allocation between sensing and communication functions, enhancing overall system performance in V2X scenarios.

Link: https://github.com/Xuezhenggdut/V2X\_ISAC\_papers

## Collaborative Sensing-Assisted Task Offloading and Resource Allocation for ISAC-Based Vehicular Clouds

Authors: J. Lin, Z. Liu, N. Chen, Y. Zhao, and L. Huang

Published in: Proceedings of the IEEE 99th Vehicular Technology Conference (VTC2024-Spring), 2024

Abstract: This paper explores a collaborative sensing-assisted framework for task offloading and resource allocation in Integrated Sensing and Communication (ISAC)-based vehicular clouds. By leveraging shared sensing information, the proposed system enhances task execution efficiency and resource utilization in vehicular networks.

Link: https://github.com/Xuezhenggdut/V2X\_ISAC\_papers

## Open RAN-Empowered V2X Architecture: Challenges, Opportunities, and Research Directions

Authors: F. Linsalata, E. Moro, M. Magarini, U. Spagnolini, and A. Capone

Published in: arXiv preprint, May 2024

Abstract: This paper discusses the integration of Open Radio Access Network (O-RAN) with Vehicle-to-Everything (V2X) communications. It highlights the challenges and opportunities of leveraging O-RAN to enable real-time V2X control and provides potential research directions, supported by preliminary simulation results validating the proposed integration.

Link: https://arxiv.org/abs/2303.06938

## A Systematic Literature Review in Distributed Resource Allocation for C-V2X

Authors: A. N. Al-Najjar, M. F. A. Rasid, F. Hashim, F. A. Ahmad, and A. Jamalipour

Published in: Ingénierie des Systèmes d’Information, June 2024

Abstract: This systematic literature review examines distributed resource allocation (DRA) schemes for Cellular Vehicle-to-Everything (C-V2X) technologies, specifically LTE-V2X and NR-V2X. It discusses the impact of machine learning and congestion control on DRA, identifies primary performance metrics, and highlights challenges and future research directions in this field.

Link: https://iieta.org/journals/isi/paper/10.18280/isi.290301

## Cross-Layer Performance Evaluation of C-V2X

Authors: Dhruba Sunuwar and Seungmo Kim

Published in: arXiv preprint, January 2024

Abstract: The authors develop a system-level simulator for evaluating the performance of Cellular Vehicle-to-Everything (C-V2X) communications. The simulator incorporates Intelligent Transportation System (ITS) scenarios and cross-layer performance evaluation capabilities, focusing on the implementation of modulation and coding schemes (MCS) to assess system efficacy.

Link: https://arxiv.org/abs/2401.15844

## Scalable Cellular V2X Solutions: Large-Scale Deployment Challenges of Connected Vehicle Safety Networks

Authors: Ghayoor Shah, Mahdi Zaman, Md Saifuddin, Behrad Toghi, and Yaser Fallah

Published in: arXiv preprint, December 2023

Abstract: This paper addresses scalability challenges in deploying Cellular Vehicle-to-Everything (C-V2X) communication networks for vehicular safety applications. It provides an overview of issues such as network congestion and packet loss in high-density traffic scenarios and discusses potential solutions to enhance the reliability and efficiency of large-scale C-V2X deployments.

Link: https://arxiv.org/abs/2312.00259

## Semantic Vehicle-to-Everything (V2X) Communications Towards 6G

Authors: Tengfei Lyu, Md. Noor-A-Rahim, Aisling O'Driscoll, and Dirk Pesch

Published in: arXiv preprint, July 2024

Abstract: The study explores the potential of Semantic Communication (SEM-COM) to revolutionize Vehicle-to-Everything (V2X) communications in the context of sixth-generation (6G) wireless networks. It discusses how SEM-COM can enhance communication efficiency and intelligence in V2X scenarios, presenting real-world use cases and identifying key research questions for future exploration.

Link: https://arxiv.org/abs/2407.17186

## Resource Allocation in C-V2X: A Review

Authors: Tahmid Zaman Tahi

Published in: arXiv preprint, January 2024

Abstract: This review provides a comprehensive overview of resource allocation strategies in Cellular Vehicle-to-Everything (C-V2X) communications. It discusses challenges such as dynamic network topologies and spectrum scarcity, analyzing various techniques to optimize resource distribution and ensure efficient utilization in intelligent transportation systems.

Link: https://arxiv.org/abs/2401.15756

## Critical Review of Vehicle-to-Everything (V2X) Topologies: Communication, Power Flow Characteristics, Challenges, and Opportunities

Authors: Gaurav Kumar and Suresh Mikkili

Published in: CPSS Transactions on Power Electronics and Applications, March 2024

Abstract: This paper provides a comprehensive review of V2X topologies, focusing on communication and power flow between electric vehicles (EVs) and the grid, homes, buildings, and other loads. It discusses various V2X communication types, including IEEE and ISO standards, Wi-Fi, and IoT-based protocols, highlighting their advantages and disadvantages. The study also presents challenges and opportunities for adopting V2X topologies in modern power systems.

Link: https://file.cpss.org.cn/uploads/allimg/20240329/10.24295CPSSTPEA.2023.00042.pdf

## V2X: Current State in 2023 and Prospects Beyond 2024

Authors: Published by: AUTOCRYPT

Published in:

Abstract: This white paper offers a detailed overview of Vehicle-to-Everything (V2X) communication technology, discussing its current state as of 2023 and future prospects beyond 2024. It addresses common questions regarding the readiness of V2X technology for large-scale deployment, technical and security challenges, and anticipated developments in the coming years.

Link: https://autocrypt.io/downloads/abstract-white-paper-v2x-current-state-prospects

## The V2X Deployment Roadmap in Europe: What to Expect by 2024

Authors: Published by: AUTOCRYPT

Published in:

Abstract: This paper provides insights into the expected progress of V2X technology deployment in Europe by 2024. It highlights regulatory, technical, and practical considerations shaping the evolution of connected vehicle networks.

Link: https://autocrypt.io