

学术报告会

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地点: 电信群楼2-410会议室

Accuracy-Aware Cooperative Sensing and Computing for Connected Autonomous Vehicles

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摘要:

Artificial intelligence (AI) models will continue to be pervasively deployed to support diverse applications in the 5G/6G era. In this presentation, we investigate AI for cooperative perception to achieve reliable situation awareness of connected and autonomous vehicles (CAVs). We discuss the key challenges and present an accuracy-aware and resource-efficient raw-level cooperative sensing and computing scheme among CAVs and road-side infrastructure. A supervised learning model is trained to capture the relationship between the object classification accuracy and the data quality of selected object sensing data, facilitating accuracy-aware sensing data selection. We formulate an optimization problem for joint sensing data selection, object classification task placement, and resource allocation, to minimize the total resource cost while satisfying the delay and accuracy requirements. A genetic algorithm based iterative solution is proposed for the optimization problem. Numerical results demonstrate the accuracy awareness and resource efficiency achieved by the proposed cooperative sensing and computing scheme, in comparison with benchmark solutions.

简介:

Weihua Zhuang is a University Professor and a University Research Chair in Wireless Communication Networks at University of Waterloo, Canada. Her research focuses on network architecture, algorithms and protocols, and service provisioning in future communication systems. She was the Editor-in-Chief of the IEEE Transactions on Vehicular Technology from 2007 to 2013, General Co-Chair of 2021 IEEE/CIC International Conference on Communications in China (ICCC), Technical Program Chair/Co-Chair of 2017/2016 IEEE VTC Fall, and Technical Program Symposia Chair of 2011 IEEE Globecom. She is an elected member of the Board of Governors, and served as the President of the IEEE Vehicular Technology Society (2023-2024). Dr. Zhuang is a Fellow of the IEEE, Royal Society of Canada, Canadian Academy of Engineering, and Engineering Institute of Canada.