

Passive, Decentralized and fully Autonomous Intersection Access Control

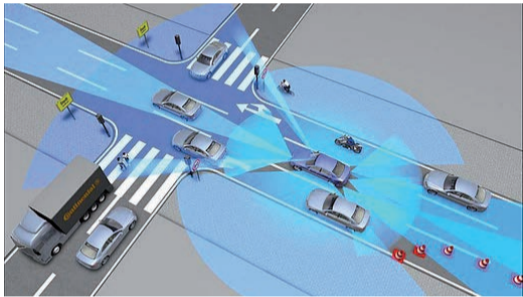
Presented By:

John Khoury, PhD

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ABSTRACT

Current research on autonomous intersection management makes a set of assumptions including active Vehicle-to-Vehicle (V2V) or Vehicle-to-Infrastructure (V2I) communications, and/or centralized control. While they enhance the efficiency of the solution, such assumptions have inherent security and privacy drawbacks and require high infrastructure costs.

This research effort sets to investigate an alternative solution to autonomous intersection management that is decentralized (no centralized controller) and passive (no vehicle communications). Our scheme permits autonomous vehicles approaching an intersection to make localized collision-free access decisions based purely on sensing and beacon information. Besides demonstrating the feasibility of a fully autonomous and decentralized approach, we show that our scheme operationally outperforms a standard actuated signal and all-way stop control. Our decentralized approach trades off optimality for low cost, and enhanced security, privacy, and practicality.

All Are Welcome