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Edge computing for autonomous vehicles. A scoping review

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Despite some recent notable achievements in autonomous road vehicles (e.g. the Waymo and Tesla autonomous car prototypes), the problem of pedestrian detection remains challenging and still lacks a universal solution. The vast majority of the existing solutions rely on sensors and computing equipment located on the vehicle itself, but this increases the cost and the energy consumption of the vehicle to unreasonable levels. In this context, it is worth attention the idea of relocating certain sensing and computing tasks to a network of roadside ("edge") devices capable to communicate in real-time with a plurality of vehicles, in order to reduce the on-board equipment. This paper is a brief scoping review of the literature dedicated to this topic, aiming to: define the main concepts related to using edge computing for pedestrian detection, identify the advantages and drawbacks of this approach (especially the security issues and the means to mitigate the threats), identify the hardware needed, and outline a typical edge infrastructure of a smart intersection with pedestrian detection capabilities.

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