CrossGuard: Enhancing Pedestrian Experience at Intersections

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Abstract

Pedestrians have long been treated as second-class citizens in the design of transportation infrastructure that has been centered around vehicular traffic. CrossGuard aims to make crossing at intersections safer and, in the process, elevate pedestrians' quality of experience (QoE). It ensures pedestrian safety without interfering with the flow of the vehicular traffic.

Challenges

- Lack of models to measure pedestrian QoE.
- Improve pedestrian Quality of Experience (QoE) without affecting vehicular traffic throughput.

Intellectual Merit

- Investigating the challenges facing vulnerable pedestrian community.
- Identifying vulnerable pedestrians and developing stochastic models for estimating the crossing time.

CrossGuard Cyber-Physical System
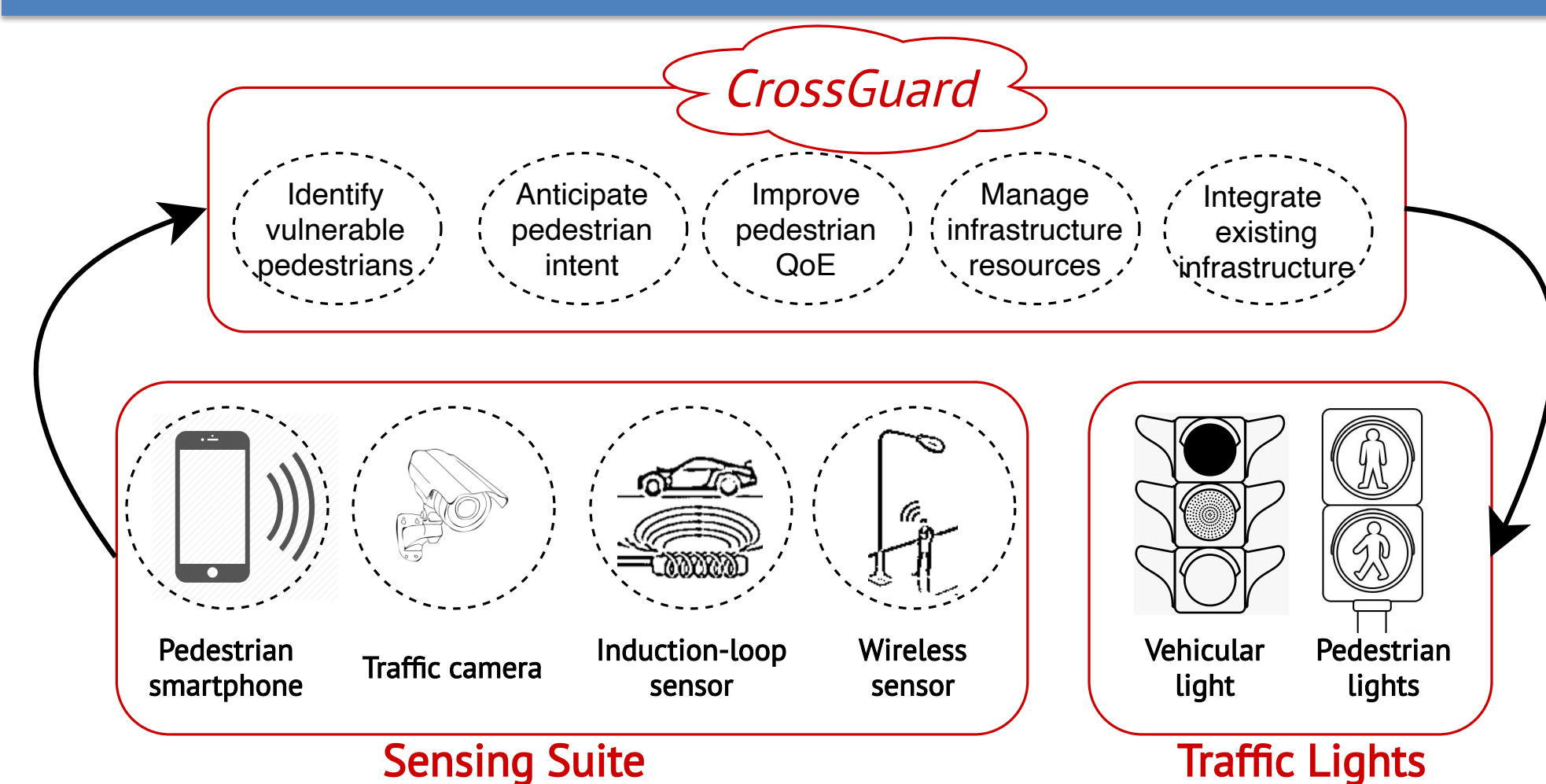
- A multi-modal CPS for seamlessly integrating technology with smart mobility to improve pedestrian safety and well-being.
- Capture rich contextual data generated by sensing devices carried by the pedestrians and those installed at the infrastructure.
- Traffic light timings will be informed by the current intersection dynamics and by stochastic prediction of traffic volumes.

Milestones for IRG

- Team building to include social science and traffic engineering expertise.
- Collaborate with stakeholders @Norfolk to install a sensor suite for pilot study.
- Focus groups with school boards regarding safety around school intersections.

Broader Impact

- Explore new avenues towards Vision Zero, a world-wide initiative that aims for zero pedestrian fatalities.
- Reduce traffic accidents involving elderly pedestrians and school children.
- By accommodating pedestrians, we expect to encourage more people to walk, potentially reducing carbon footprint.