Project No.	Project Title	
IE_ABS-023	Development of Obstacles Data Sharing System for eScooter Riders	
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Abstract

The electric scooter (E-scooter) is an economical, lightweight, and popular means of urban micro-mobility. Due to its increasing popularity as efficient means of mobility, many companies in big cities worldwide operate shared e-scooter services that millions of individuals use daily.

Despite its efficiency and attractiveness, it is not safe where The major hazards associated with it are colliding with dynamic and static objects and falling from the e-scooter due to poor infrastructure and the E-scooters physical characteristics.

While the existing market offers safety systems that aim at preventing E-scooter riders from colliding with static and dynamic objects, there are currently no solutions that inform riders about infrastructure-related hazards in their desired route before deciding to use these routes. Thus, in this project, we developed a novel alert system that will notify users of infrastructure-related hazards in their near vicinity and along the routes they consider using to reach their destination.

Whilst at first, our project's idea was to develop a physical system, using sensors and electric devices, we have been exposed to the benefits of socially based shared systems that will not only achieve the goal of increasing riders' awareness of the hazards around them but also have the potential of becoming an essential information source for municipalities and authorities in identifying critical infrastructure-related hazards that should be fixed. Based on hazard reports we get from users by the 'report hazard' CTA button, we created a constantly updating dataset that is showing hazards on top of a map. The system allows riders to be aware of obstacles in their planned route and informs them once they are about to encounter a reported obstacle.

Rather than limit our users to owning a physical system that will need technical maintenance and will produce waste – we have designed an application that is accessible via mobile phones and utilizes the user's devices' GPS to get the E-scooters' location in real-time. The application also uses the built-in speaker to inform the user when approaching an obstacle.

We currently have a functioning website, with mobile access. This website shows the user its location in real-time as well as the hazards along the route. Any user can report a hazard at any time. We created an algorithm for data verification that is deleting irrelevant or outdated hazard marks, and we also offer users the option of entering any address and getting directions according to the shortest path. Our future vision is to continue developing this project with the purpose of generating a fully working application.

Keywords: electric scooter, micro-mobility, safety system, data sharing, alert