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Crowd-Machine Partnership on Road Infrastructure Quality Recognition and Resilience

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Crowd-Machine Partnership on Road Infrastructure Quality

Recognition and Resilience

Eric Thompson

Public roads are a vital component of modern-day society, as they are necessary for the transportation of people and capital; consequently, it is important that they are regularly and effectively maintained. Unfortunately, this maintenance is difficult to manage due to the sheer area that roads span. It is an arduous task to locate every instance of road damage, as well as to determine the urgency that each bit of damage necessitates. Repairing road damage has high costs in labor, time, and money. To provide a more efficient way to monitor road conditions, we are designing a mobile application that collects information about the roughness of pavement through built-in sensors on mobile phones. Our application will inform drivers about road anomalies using crowdsourcing. The app also will provide navigation capabilities during the data collection. We will conduct data analysis on the collected phone data from users' driving routes to determine portions of road that contain damage. This analyzed data will be used to produce glanceable feedback for the user during the navigation, such as visualizations on the map, or voice alerts. We will iteratively improve the user interface through user studies to prepare for large-scale deployment. Going forward, we plan to release the app publicly and crowdsource the data collection.