Oct 21, 2026

Honorable Mayor Knight,

Currently, finding and managing potholes takes a lot of time and money for local governments. Villages often need to send staff out just to look for road damage before repairs can start. Our project addresses this issue. By putting our automated detection devices on your municipal vehicles, the system will find potholes during regular driving, measure how severe they are, and show their exact GPS locations on a live web dashboard. This way, public works teams can skip the manual search and focus on making repairs.

The research team will build and install four portable monitoring devices on Village service vehicles, such as garbage truck. The devices run passively on standard vehicle power and do not interrupt drivers' normal duties, operations, or schedules. We will use the collected road images and depth data to train and improve accurate, efficient deep learning models that run directly on the vehicle devices. No human subjects will be studied or monitored. All camera sensors will point down at the road surface to capture only pavement details, so the data will not include pedestrians, vehicle occupants, or private property. The Village of Middleburgh will get access to a cloud-based map dashboard that shows geotagged pothole locations, objective severity metrics (pothole depth and surface area), and priority repair recommendations to help allocate resources.

The Village of Middleburgh will not need to provide any funding, equipment, or matching capital. We plan to cover all hardware setup, sensor costs, software development, installation, data storage, and technical maintenance with academic research grants. We hope to fund the project through competitive research grants, including UAlbany's Strategic Allocation of Resources (StAR) Public Impact Research pathway and federal National Science Foundation (NSF) programs. We also welcome collaboration on state or federal rural infrastructure innovation grants where a municipal-academic team could be an advantage.

To formalize the partnership for upcoming UAlbany's Strategic Allocation of Resources (StAR) grant reviews, the research team asks the Village Board of Trustees to authorize: permission to mount temporary, non-invasive monitoring devices onto four (4) Village fleet vehicles during routine service routes after receiving funding, and issuance of an official Letter of Support confirming the Village's agreement to collaborate in testing the system and reviewing the resulting roadway condition data.

Sincerely,
Md Nour Hossain, Ph.D.
Assistant Professor
&
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