

Carnegie Mellon senses traffic using advanced vehicle-based sensor data

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Researchers from Carnegie Mellon University's Department of Civil and Environmental Engineering collaborated with Uber Advanced Technologies Group (Uber ATG) to better understand how advanced

vehicle-based sensor data can inform high resolution traffic flow measurements.

Henry Posner, Anne Molloy, and Robert and Christine Pietrandrea Associate Professor Sean Qian and research assistant Shuguan Yang, both members of Carnegie Mellon's Mobility Data Analytics Center (MAC), [co-authored a white paper](#) informed by Uber Advanced Technologies Group's Allison Plummer. For the purpose of this study, Uber provided MAC with access to select data, including vehicle travel speed and traffic density along two road segments in the Strip District.

The researchers created a case study showing how advanced vehicle-based sensors can provide information on traffic conditions in a given area. Using [historical data](#), they chose instances where at least three sensor-equipped vehicles had passed through a given road segment. Information from the time the first and third vehicle passed a given point provided the input for their method, which was then able to output an accurate prediction of the [traffic density](#) between those times.

As indicated in the [white paper](#), MAC demonstrates how [sensor data](#) being collected today, irrespective of the developer collecting it, could conceptually open new opportunities for traffic estimation and [smart cities](#) in general.

Qian, director of the MAC, and Yang plan to continue testing this approach over a greater road network using larger data sets. They are interested in comparing the efficacy of using data from vehicle-based floating sensors, versus more traditional fixed sensors.

Provided by Carnegie Mellon University

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