Traffic21 Institute's Third Smart Mobility Challenge 2021 - 2022
Request for Research Assistance with Real-world Mobility Problems

Carnegie Mellon University's Traffic21 Institute and its affiliated US DOT National University Transportation Center, Mobility21, are inviting representatives of municipalities and public transit operators in southwestern PA to request research assistance by submitting their **real-world mobility problem** to be considered for the Third Smart Mobility Challenge. It is anticipated that 2 – 3 research projects will be selected, and the research will be conducted from **July 1, 2021 – June 30, 2022**.

This request is inspired by Traffic21's years of successful collaboration with the City of Pittsburgh to become a globally recognized smart city test bed and the desire to **demonstrate how suburban and rural communities can also benefit** from a similar collaboration.

The first Smart Mobility Challenge was held from 2017 – 2018, and included research conducted in collaboration with Millvale, McKees Rocks, Bethel Park, Greensburg, Mt. Lebanon, Dormont, Cranberry Township and Lawrence County.

The second Smart Mobility Challenge was held 2019 – 2020 leveraging the Carnegie Mellon University's Mobility Data Analytics Center (MAC) which collects, integrates and learns from massive amounts of mobility data and contributes to the development of smarter multi-modal and multi-jurisdictional transportations systems. These projects supported North Huntingdon Township and the Airport Transportation Corridor Association's RideACTA shuttle program. Learn more about the previous challenges here.

For our third Smart Mobility Challenge we are looking for municipalities and public transit operators who have mobility problems in a suburban or rural community that they would like assistance in studying. Problems addressing issues of transportation equity and COVID-19 are encouraged. Proposed problems should fall into one (or more) of the following areas:

1. Evaluate proposed future network impact, accessibility to jobs/healthcare, safety and cost/benefit analysis of road closure, curb management, mobility services, new development or other transportation improvement projects including complete street projects, public right of way permit system; optimize traffic mitigation plans for roadway construction projects.
2. Optimize design and operation of public transit/shuttle/bike/microtransit/first-/last-mile mobility services.
3. Develop real-time computer vision algorithms to detect, classify, and track roadside objects (e.g., vehicles, pedestrians, bicyclists, etc.) with advanced analytics (e.g., near collisions, lane changes, etc.).
4. Evaluate the dynamic impact of salt and brine on road conditions during winter. Optimize salt and brine allocation, based on topology, weather conditions, time, and traffic intensity, to improve road safety.
5. Improve public transit resilience and efficiency post-COVID, to support transportation needs in all communities and address the inequality gap due to different availability to commute.

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6. Evaluate, analyze, and recommend combined urban design/complete street design responses to impact of COVID and potential future public health conditions (more drop off lanes, increased sidewalk width/street closures for increased outdoor retail and restaurant activity, related increase in green infrastructure) in neighborhood and town centers.
7. Evaluate, analyze, and recommend community design responses to impact of changing technologies for mobility and work (such as LED lighting, autonomous vehicles/delivery and e-commerce, and micro mobility) in neighborhood and town centers.

Please note, there is <u>no</u> cash award/grant to the municipality or public transit operator. The funding supports faculty and students in applying cutting edge intelligent transportation systems technology to real-world mobility problems submitted as part of this request. The municipality or public transit operator will be updated throughout the project and receive a final written and verbal report.

Who is Eligible to Submit a Real-world Mobility Problem for Consideration
Any municipality or public transit operator in southwestern Pennsylvania – Allegheny (outside the City of Pittsburgh), Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Washington and Westmoreland counties is eligible to apply.

Submission Process
The process is simple. We just need your contact information, your problem statement, a description of the data you already have available to help address this problem (if any), and why your municipality or public transit operation would be a good test bed for this type of research support. All requests MUST be submitted through the on-line web form (click here) by 5:00 PM on **Wednesday, October 14, 2020**.

Review & Selection Process
- Problem statements will be reviewed for relevance to the research interest areas described on the previous page and the type/availability of data to address the problem.
- Then, problems will be forwarded to our researchers for consideration and further development.
- If a problem is successfully matched with a researcher, that researcher will work with selected municipality and/or public transit operator to develop a project proposal.
- Proposals will then be submitted by the researcher and reviewed for final awards.

Schedule
- October 14, 2020 – Problem statements due from municipality and/or public transit operator.
- December 18, 2020 – Researchers submit their project proposal.
- February 5, 2021 – Winning projects (mobility problems) selected.
- May/June 2021 – Kick-off meetings will be conducted between project team staff and the municipal or public transit operator representative.
- July 1, 2021 – Project begins.
- December 2021/January 2022 - Project mid-point check-in meetings will be conducted between project team and the municipal or public transit operator representative.
- June 30, 2022 – Project ends.
- July 2022 – Project completion meetings will be conducted between project team and the municipal or public transit operator representative.

Want to talk with us about your "Assistance with Real-world Mobility Problems" before you submit?

We are here to help.

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