Cloud Based Collaborative Road surface monitoring using Deep Learning and Smartphones

Technology Transfer Activities

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Technology Transfer Activities

1 Outputs

1.1 Output #1

A Master Thesis '*Cloud Based Collaborative Road Surface Monitoring Using Deep Learning and Smartphones*' has been completed by Akshatha Ramesh at Clemson University.

1.2 Output #2

A podium presentation '*Cloud-based Collaborative Road Condition Monitoring using In-Vehicle Smartphone Data*' was given by Longxiang Guo at the 7th Annual UTC Conference for the Southeastern Region on Mar. 24, 2022, in Boca Raton, Florida.

1.3 Output #3

A research paper '*Cloud-Based Collaborative Road-Damage Monitoring with Deep Learning and Smartphones*' has been published in the MDPI Sustainability journal.

Ramesh, A., Nikam, D., Balachandran, V.N., Guo, L., Wang, R., Hu, L., Comert, G. and Jia, Y., 2022. Cloud-Based Collaborative Road-Damage Monitoring with Deep Learning and Smartphones. *Sustainability*, *14*(14), p.8682. **https://doi.org/10.3390/su14148682**

1.4 Output #4

The student Akshatha Ramesh has won the 2nd place in research presentation in the 4th USDOT C2M2 Annual Virtual Fall Conference!

2 Outcomes

2.1 Outcome #1

Increased understanding of road condition detection using smartphones and cloud-based services.

2.2 Outcome #2

Improved process and technology to monitor the road conditions in a more efficient and cost-effective way.

3 Impacts

3.1 Impact #1

Reduce the cost of road condition monitoring by providing a very cost-effective way with a minimum investment of equipment and labor.

Improve the safety of transportation systems, especially the multimodal connected and automated transportation systems, by providing timely needed road condition monitoring.

3.2 Impact #2

The project has involved and trained one postdoc, four graduate students at Clemson University include one female student, and two undergraduate students at Benedict College.

3.3 Impact #3

The SCDOT has shown interest in this project and indicates potential applications of the outcomes to support their missions.

3.4 Impact #4

The work has been disseminated though presentation and publication. It was presented at the 7th Annual UTC Conference for the Southeastern Region on Mar. 24 and 25, 2022, in Boca Raton, Florida. It has also been published entitled "*Cloud-Based Collaborative Road-Damage Monitoring with Deep Learning and Smartphones,*" in the journal of Sustainability.