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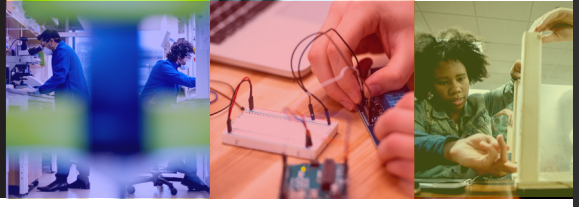

National Engineers Week 2021

IMAGINING TOMORROW

Can AI Models Advance Our Understanding of Exposure to Local Scale Mobile Source Pollutants in Highly Urbanized Areas?

CIVIL & ENVIRONMENTAL ENGINEERING

DESCRIPTION

The surface topography, emission source variation, and population distribution of urban landscapes all lend themselves to highly variable air pollutant concentrations in urban areas; concentrations that can vary dramatically even within short distances. The spatial variations in air pollutant concentrations can be as large as the contrast between cities and epidemiological studies clearly show that within-city PM exposure is larger than the between-city effect. One of the critical gaps in our understanding is how to best characterize within-city air pollutant concentration gradients, which is crucial for exposure assessment, urban planning, air pollution monitoring, and environmental equity. The development of high accuracy portable pollution sensing instruments and Global Positioning System (GPS) technology, the use of vehicles for mobile air pollution monitoring can be used to tackle some of the challenges of estimating pollutants based on stationary monitoring sites. These mobile sensors can typically achieve high spatial resolution for air pollutants measurement, but generate incredible amounts of data. This talk explores the trade-offs between using different ML approaches to produce credible micro-scale estimates for regional or hotspot modeling.

ABOUT THE SPEAKER

Deb Niemeier is the Clark Distinguished Chair in Energy and Sustainability at the University of Maryland, College Park and serves as a professor in the Dept. of Civil and Environmental Engineering. She has extensive expertise in understanding the spatial properties of mobile source emissions, developing new methods for improving vehicle emissions inventories, and accelerating the implementation of regulatory guidance to better identify vulnerable populations and environmental health disparities. Her research is currently focused on understanding infrastructure features that give rise to inequitable outcomes in the built environment, particularly with the onset of climate change. In 2014, Niemeier was named a Fellow of the American Association for the Advancement of Science (AAAS) for "distinguished contributions to energy and environmental science study and policy development." In 2015, she was named a Guggenheim Fellow for foundational work on pro bono service in engineering. In 2017, she was elected to the National Academy of Engineering. Niemeier received a B.S. in civil engineering from the University of Texas (1982), her M.S. from the University of Maine and a Ph.D. in civil engineering from the University of Washington (1994).

THURSDAY
FEB. 25TH
3:00-4:00 PM EST

VIRTUAL PRESENTATION
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The Civil & Environmental Engineering Department

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Dr. Deb Neimeier,
Clark Distinguished Chair in Energy and Sustainability,
University of Maryland,
College Park

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