We are seeking a highly motivated and interdisciplinary Doctoral Research Assistant to join a collaborative project aimed at advancing Green Stormwater Infrastructure (GSI) systems for urban communities. This project addresses the growing need for sustainable stormwater solutions by integrating cutting-edge AI technology, real-time monitoring, and data from engineering, social science, urban planning, and policy.

Project Overview: GSI systems are increasingly used to mitigate urban stormwater challenges. However, their long-term effectiveness is limited by gaps in understanding life-cycle dynamics, a lack of standardized processes for incorporating data into design and policy, and limited consideration of community factors. This project will address these challenges by:

- Developing AI-driven models that merge real-time GSI monitoring data with social, environmental, and policy-making information.
- Collaborating with government agencies, community organizations, and urban planners to create smart, sustainable GSI systems for urban communities.

Key Responsibilities:

- Conduct research on GSI maintenance and performance by installing and using real-time monitoring systems.
- Develop AI and machine learning models to integrate real-time monitoring data
- Collaborate with colleagues in computer science and computer engineering to integrate community inputs into GSI operations.
- Collaborate with interdisciplinary teams, including engineers, urban planners, social scientists, and policy makers.
- Engage with government agencies and community organizations to co-develop data-driven, sustainable GSI solutions.
- Contribute to the dissemination of research findings through academic publications, presentations, and community outreach.

Qualifications:

- Bachelor's or Master's degree in Civil Engineering, Environmental Engineering or a related field.
- Strong interest in interdisciplinary research integrating technology, community needs, and policy.
- Experience or interest in AI applications, data science, and real-time monitoring systems.
- Excellent written and oral communication skills.
- Ability to work independently and as part of a collaborative team.

Preferred Qualifications:

- Familiarity with stormwater management, GSI, or urban infrastructure projects, particularly monitoring equipment.
- Experience with AI and machine learning applications in environmental systems.

Working at Villanova: The Villanova Center for Resilient Water Systems (VCRWS), part of the Department of Civil and Environmental Engineering at Villanova University, has the mission *to engage with society to create resilient solutions to global water challenges*. Villanova University is a national university with doctoral and master's programs. Aligning with Villanova's mission veritas, unitas, and caritas, we value and seek to empower all members of our community to develop their potential, bring

their full self to the goals of VCRWS, and engage in a community of inclusion. This mission is a common responsibility for all VCRWS members.

Benefits:

- Competitive stipend and tuition remission.
- Opportunity to work on a cutting-edge, cross-disciplinary project with real-world impact.
- Mentorship and collaboration with leading experts in civil engineering, environmental science, computer science, urban planning, and policy.
- Potential for professional development, including conference presentations and publication opportunities.

This position offers the chance to engage in transformative research that combines technology, community empowerment, and environmental sustainability to improve urban stormwater solutions. If you are passionate about making a meaningful impact on urban environments through innovative engineering and social justice, we encourage you to apply!

To apply, please send a CV to Dr. Virginia Smith (virginia.smith@villanova.edu) and Bridget Wadzuk (bridget.wadzuk@villanova.edu).

Postdoctoral Researcher Position: Stormwater Infrastructure Sustainability in Urban Environments

Position Title: Postdoctoral Researcher – Stormwater Infrastructure Sustainability in Urban Environments

Project Overview: We are seeking a highly motivated and talented Postdoctoral Researcher to join our interdisciplinary team working on a groundbreaking project focused on the sustainability of Green Stormwater Infrastructure (GSI) in urban environments at Villanova University. Our project addresses the critical need for sustainable stormwater management solutions that integrate engineering, computer science, urban planning, policy making, and social sciences, in collaboration with government agencies and community organizations.

Project Objectives:

- Develop innovative AI-driven models that integrate real-time monitoring data with technical, social, and policy-making data to advance GSI management.

- Incorporate community dynamics, history, and feedback into GSI management practices to improve the long-term performance of GSI systems.

- Empower communities by providing actionable information and platforms to address stormwater challenges and contribute to social equity.

Key Responsibilities:

- Conduct research on the life-cycle dynamics of GSI systems and develop science-based, data-driven maintenance protocols.

- Collaborate with engineers, computer scientists, urban planners, policymakers, and social scientists to integrate various data streams into AI-driven models for GSI management.

- Engage with community organizations and government agencies to incorporate local knowledge and community dynamics into GSI solutions.

- Develop tools and technologies that enable targeted and efficient maintenance of GSI systems and promote sustainable, community-driven stormwater management practices.

- Contribute to the dissemination of research findings through academic publications, presentations, and public engagement initiatives.

Qualifications:

- A Ph.D. in Civil Engineering, Environmental Science or a related field.

- Strong background in stormwater management, GSI, or related areas.

- Experience with AI applications, data integration, and real-time monitoring systems.

- Excellent communication skills, with a demonstrated ability to work collaboratively across disciplines.

- Commitment to advancing social equity and community engagement in environmental sustainability projects.

Why Join Us: This project offers a unique opportunity to work at the forefront of sustainable urban development, integrating cutting-edge technology with community-centered approaches to stormwater management. As a Postdoctoral Researcher, you will contribute to solutions that have the potential to transform urban environments and enhance social equity. You will work with a dynamic team of researchers and practitioners dedicated to creating smarter, more resilient cities. Please feel free to reach out with any questions about this position.

The Civil and Environmental Engineering Department has excellent infrastructure to support scholarship, including fluids, water resources, soils, environmental, and structural laboratories, computational research facilities along with the Stormwater Green Infrastructure Research and Demonstration Park. Additionally, a large expansion to the College of Engineering Center for Engineering Education and Research building is underway that will provide new undergraduate and research laboratories more than doubling the current research space. This position is contingent upon VCRWS research grants and resources.

Application Instructions: Interested candidates should submit a CV to Dr. Virginia Smith (virginia.smith@villanova.edu). In your email, please describe your research interests and how they align with the objectives of this project. Applications will be reviewed on a rolling basis until the position is filled.

Contact Information:

Virginia Smith: virginia.smith@villanova.edu

Peleg Kremer: Peleg.kremer@villanova.edu

Bridget Wadzuk: bridget.wadzuk@villanova.edu

Xun Jiao: xun.jiao@villanova.edu

Equal Opportunity Statement: Villanova   is a Catholic university sponsored by the Augustinian order. Diversity and inclusion have been and will continue to be an integral component of Villanova University's mission. The University is an Equal Opportunity/Affirmative Action employer and seeks candidates who understand, respect and can contribute to the University's mission and values. From its founding in 1842 to its position today as a nationally recognized university, Villanova University has forged a path of academic excellence. The University is strongly rooted in a sense of community, and the CEE Department and College of Engineering are deeply committed to work-life balance and providing family-friendly programs for our faculty.