Texas State University

MATERIALS WITH INTELLIGENCE

BIG IDEAS

Our faculty researchers are focused on finding practical ways to advance sensor technology, to create new materials that can reconfigure themselves to react to environmental conditions, and to improve the lifecycle management of infrastructure through sensor systems and predictive modeling.

A **BIG** *Impact -* MATERIALS WITH INTELLIGENCE

Sensor technologies enabled the invention of electronic devices that have changed the way we live. At Texas State University, we are inventing new ways to use sensors in everyday objects and applications to detect and monitor change. Our faculty are on the cutting-edge of research and innovation and are training our students to implement new approaches in the workforce.

Texas State Research and Capabilities
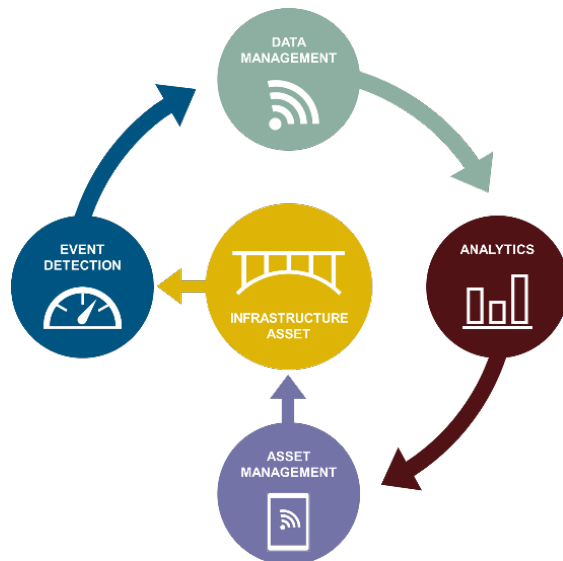
Smart Cities
- Embed sensors in infrastructure to sense structural flaws and enable proactive interventions in buildings, utilities, and power grids
- Use water quality sensors to help supply cities with clean water
- Integrate sensors in pipelines to detect and pinpoint leaks, enabling fixes that reduce waste and improve the environment

Intelligent Materials
- Integrate solar energy generating capacity in everyday materials
- Adapt sensors for medical use to detect disease in animals and humans before symptoms arise

Technology Enhanced Infrastructure

TXST Civil Engineering Program launched its first cohort in fall of 2019. The Civil Engineering Program is one of very few in the nation with a holistic emphasis on technology-enhanced infrastructure, including sensor systems; data transmission, storage and sharing; predictive modeling; maintenance protocols; and asset management.

Diagram: DATA MANAGEMENT → ANALYTICS → ASSET MANAGEMENT → EVENT DETECTION, centered on INFRASTRUCTURE ASSET

BIG *Philanthropic Opportunities*

- Endow a Materials with Intelligence Program Fund to provide flexible resources to implement and sustain this initiative

- Seed and accelerate projects that focus on materials with intelligence research

- Sponsor a collaboration between industry and faculty/students to solve a challenge or advance new applied knowledge

- Provide undergraduate scholarships to help Texas State recruit high-achieving students who will support and collaborate with faculty on research

- Endow graduate fellowships and scholarships to fund student research with faculty

- Invest in faculty fellowships for visiting experts in material science

- Sponsor opportunities for students, faculty, and industry to showcase their sensors-based projects

- Establish an endowed professorship to support faculty in conducting cutting-edge research

- Fund an endowed chair to support departmental leadership in the future of teaching and research

- Direct grants to support the purchase of state-of-the-art equipment and training for advanced sensor development and testing

- Fund a Materials with Intelligence Innovator Award that encourages new research collaborations and highlights innovative sensor development

- Support boot camps to teach sensors-based entrepreneurship and commercialization

Your Invitation

We invite visionary philanthropic partners to support our students and faculty in discovering sustainable solutions for global issues through innovative research.

TEXAS STATE UNIVERSITY ®

MEMBER THE TEXAS STATE UNIVERSITY SYSTEM