

Shriners Children's and Georgia Tech Pioneering First-of-its-Kind AI Tool to Transform Pediatric Spinal Surgery

Groundbreaking advancement could lead to improved spinal surgery outcomes

PHILADELPHIA, PA, UNITED STATES, June 1, 2026 /EINPresswire.com/ -- Shriners Children's is developing an Artificial Intelligence (AI) tool that could make a life-changing difference for children undergoing spinal surgery. Harnessing thousands of data points from surgical procedures, clinical notes, X-rays, and patient histories, this innovative AI model will help predict potentially dangerous changes occurring within the spinal cord during surgery. Once complete, the tool will be the first predictive AI model of its kind in pediatric spinal surgery.

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Dr. Bruce Brenn, Director of Anesthesia at Shriners Children's Philadelphia

“Neurophysiologists constantly watch for changes in spinal signals that could indicate injury during surgery,” said Dr. Bruce Brenn, Director of Anesthesia at Shriners Children's Philadelphia. “The advantage of this tool is that it can tell us if a patient is prone to signal changes, before we even

operate. As a physician, the worst thing that can happen in the operating room is having a problem and not knowing what's causing it. If you can predict which patients are prone to a problem, it becomes possible to make sure a problem never happens in the first place. That is the best outcome.”

Shriners Children's is also working with Georgia Tech to train the AI model through natural language processing and machine learning. Dr. Brenn said while the tool is still in its early stages, once fully developed, it could transform spinal surgery.

“We're proud to collaborate with Shriners Children's on this groundbreaking initiative that combines advanced AI technology with real-world clinical expertise,” said Leanne West, chief research and innovation officer at Shriners Children's and director of the Pediatric Innovation Network at Georgia Tech. “By applying natural language processing and machine learning to decades of patient data, we have the opportunity to develop tools that could dramatically

enhance surgical planning and improve outcomes for children around the world.”

“This technology could fundamentally change how we approach every pediatric spinal surgery,” Dr. Brenn said. “We might decide to stage the operation on different days instead of doing it all at once. The tool could lead the surgeon to do halo traction before the fusion to reduce the chances of a signal change. For me as an anesthesiologist, it could change how I manage blood pressure. I might plan to lower the blood pressure in a certain part of the operation and raise it in another part. The potential for new areas of inquiry is endless.”



Dr. Bruce Brenn, Director of Anesthesia at Shriners Children's Philadelphia, and team performing surgery on a patient.

Dr. Brenn said Shriners Children's extensive network across the U.S., Canada, and Mexico, uniquely positioned the nonprofit healthcare system to develop this new technology. The healthcare system's high volume of diverse and complex spinal surgery cases provides thousands of rich data points, making it ideal for creating the predictive tool.

“Working with Shriners Children's gives us access to a large amount of high-quality, diverse data from across their international network,” said West. “The complexity and variety of cases treated within their system offer the ideal foundation for training a predictive AI model that can truly make a difference in pediatric spinal care.”

Dr. Brenn acknowledged that while AI isn't the solution for all things in the healthcare field, it can be a very beneficial tool for analyzing large data sets and predicting outcomes or complications.

“This AI model certainly won't be something that replaces a doctor or anyone on our care team, but it will be an additional resource we can utilize to inform our care decisions and achieve the best possible outcomes for our patients,” said Dr. Brenn. “The fact that this data is coming from within our own healthcare system is even better because we know we can trust the information it's using. And at the end of the day, it's not just about predicting outcomes, it's about changing kids' lives.”

Shriners Children's currently has a preliminary manuscript being considered for publication.

About Shriners Children's

Shriners Children's improves the lives of children by providing pediatric specialty care, conducting innovative research, and offering outstanding education programs for medical professionals. Children with orthopedic conditions, burns, spinal cord injuries, and cleft lip and palate are eligible for care, regardless of the families' ability to pay or insurance status, and receive all care and services in a compassionate, family-centered environment. For more information, please visit shrinerschildrens.org.

Georgia Tech

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The Institute offers business, computing, design, engineering, liberal arts, and sciences degrees, as well as professional development and K-12 programs for fostering success at every stage of life. Its more than 56,000 undergraduate and graduate students represent 54 U.S. states and territories and more than 146 countries. They study at the main campus in Atlanta, at instructional sites around the world, and through distance and online learning.

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