

Advanced Analytic Modeling for Growth and Curve Progression in Idiopathic Scoliosis

Principal Investigator
Pascal Van Hentenryck, PhD

PROJECT OVERVIEW

This project develops machine learning models to better understand and predict growth patterns and curve progression in pediatric patients with idiopathic scoliosis. Using historical data such as height measurements, radiological maturity scores, and CXM, a collagen X biomarker identified by the Shriners team, the project aims to uncover how different features contribute to patient growth and Cobb angle progression.

The Challenge

Predicting growth cessation and curve progression in idiopathic scoliosis is clinically important but complex. Clinicians must consider biological maturity, radiographic measures, biomarkers, and longitudinal patient data when making treatment decisions, including monitoring and bracing strategies.

The Innovation

The project applies advanced analytic and machine learning models to time-series clinical and radiographic data. By incorporating CXM and other maturity measures, the work aims to improve prediction of growth cessation and curve progression beyond traditional assessment methods.

Potential Impact

This work could help clinicians better predict scoliosis progression, personalize monitoring and treatment strategies, and improve timing of interventions for pediatric patients.

INSTITUTION

Georgia Institute of
Technology

FUNDING

\$249,952

STATUS

Active
Research Ongoing

TIMELINE

2024–2026