**SMALT Lab Vision**

The Smart Manufacturing Advancement and Logistics Technology (SMALT) laboratory at the University of Dayton is dedicated to pioneering advancements in additive manufacturing. This endeavor seeks to enhance the quality of manufactured components, minimize energy utilization, and enable the production of complex parts. The laboratory's vision encompasses the integration of sensor data derived from diverse modalities (infrared camera, ultrasound, x-ray, electric field), coupled with advanced computational methods. This integration aims to create a real-time digital response of the manufacturing process, thereby facilitating comprehensive control over the part's quality, reliability, and sustainability. Further emphasizing our commitment, the SMALT laboratory ardently focuses on high-performance computation, deep learning, and data analysis involving sensor data interpretation. This multifaceted approach is pivotal in refining the manufacturing process, contributing significantly to a more sustainable, energy-efficient manufacturing technique that has the potential to replace the conventional manufacturing process.