



Capability Statement

Core Competencies

The applied Medical Device Institute (aMDI) specializes in the early stage concept development, feasibility testing and product development of medical devices. aMDI, a non-academic unit of the Padnos College of Engineering and Computing of Grand Valley State University, has full access to the depth and breadth of engineering, science, computational resources and laboratories of the university. aMDI engineers bring over 50 years of industry experience in biomedical, manufacturing, and systems engineering.

aMDI builds teams comprised of research and development faculty, students, and aMDI professional engineers that are customized for specific individual project needs. That is, the right team, to answer the right questions, at the right time.

- Cradle to commercialization engineering services for mechatronic devices, software, and systems
- Define user requirements, develop use-cases, and design inputs.
- Ideate, develop, and prototype concepts for quantitative evaluation and down-select.
- Develop system-level requirements, process documents, and verification and validation test plans.
- Demonstrate design concepts and feasibility computationally, in 3D models, simulations, and hardware.
- Mechanical, electrical, electronic and software/hardware prototyping
- Analog/digital circuit design
- PCB development capabilities (Altium, OrCAD, SolidWorks) and IDE platforms
- Embedded software/hardware development
- Web and mobile app development (Rust, C, C++, Java, Python, SQL, and others)
- Machine learning, deep learning/AI, and algorithm development, coding, and testing
- Design and analysis using 3D solid modeling, finite element analysis, and computational fluid dynamics.
- Pre-compliance mechanical and electromagnetic compatibility in-house testing

Past Performance

Encoris

- Developed a minimally invasive surgical spine trainer (S2T)
- Comprehensive mechanical, electrical, machine vision, and software design

Spectrum Health Innovations

- Developed an external female urinary catheter
- Concept through prototype development including materials and design for manufacturing

Sterility

- Developed a comprehensive, automated hand sanitization system for healthcare providers
- Identifies patient zones, alerts, records, and reports hygiene events

Differentiators

- SolidWorks™ Entrepreneurs - Premium
 - Simulation Premium, Flow Simulation, Electronic Cooling Module, Plastics, Electrical Professional, PCD, MBD standard, Inspection Professional, Composer, Visualize Professional
- Carbon 3D™ Certified Production Partner
- In house 3D AM and Rapid Prototyping for custom hardware designs
- Independent, multidisciplinary research and development problem solvers
- Access to world-class laboratories and industry-leading faculty members through Grand Valley State University

Contact Information

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