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## 2021 ASME/SME Student Manufacturing Design Competition

Tuesday, June 22, 2021  
12:00 PM – 3:00 PM Eastern Time

The purpose of the competition is to foster interest in manufacturing, provide the manufacturing engineering community with fresh new perspectives on design, and create a forum for students to share their new and innovative ideas. Original student designs that focus on manufacturing engineering and science are sought. Any design of a system, component, or process that can be used to promote the art, science, and practice of manufacturing engineering is acceptable.

### 2021 Finalists

Eastern Time	Title	Student Authors	University
12:00 - 12:20	Customized protective visor against COVID-19 enabled by 4D Printing	Qinglei Ji	KTH Royal Institute of Technology
12:20 - 12:40	Hybrid Manufacturing Work Cell for Fabrication of Large-Scale Metal Parts	Joshua Penney; Aaron Cornelius; Ethan Vals; Jake Dvorak; Michael Buckley; Leah Jacobs; Gregory Corson	University of Tennessee Knoxville
12:40 - 13:00	Analysis of a Closed-Loop Digital Twin	Andrew Eyring	Brigham Young University
13:00 - 13:20	4D Thermal Scanner for Additive Manufacturing Systems	Christopher Henson; Nathan Decker	University of Southern California
13:30 - 13:50	Development of a Handheld Biopsy Device for Needle Biopsy Procedures	Roy Araya; Zachary Tupper	University of Florida
13:50 - 14:10	Development of Manufacturing Automation for the Sorting and Assembly of Nasopharyngeal Swabs	Trent Sakakini; Josiah Go; Petro John; Thien Nguyen; Tobias Hynes; Jayaram Rajagopalan	University of Texas Dallas
14:10 - 14:30	Rotating Internal Mandrel Printhead Design for Material Extrusion Manufacturing of Artificial Muscles in Low Gravity Environments and Spaceflight	Kellen Mitchell; Lily Raymond	University of Nevada Reno
14:30 - 14:50	UR Cobot Digital Twins to Assist SMEs with Robot Integration	JT Frandsen	Brigham Young University

### Judges:

- Ihab Ragai (Associate Professor, Penn State Behrend)
- Jarred Heigel (R&D Manager, Third Wave Systems, Inc.)
- Dale Lombardo (Special Process Technologies Leader, GE Aviation)

The First, Second, and Third Place awardees will be recognized at the ASME Awards Ceremony on Tuesday, June 22, 2021 starting at 3:00 PM Eastern Time. The Student Manufacturing Design Competition will be announced towards the end of the ASME awards ceremony.

### Competition Organizer:

- Professors Frank Pfefferkorn ([frank.pfefferkorn@wisc.edu](mailto:frank.pfefferkorn@wisc.edu))