



Regional 2020-2021 Contest Catalog

ROBOTICS AUTOMATION TECHNOLOGY (Virtual)

Contest Description

This contest challenges two-person teams to demonstrate operation of a five-axis servo-robot along with a set of sensors and motorized devices to resolve a simulated production process problem. Teams set up and demonstrate operation of a robotic work cell from a word problem. Contestants are required to create a flowchart and sequence of operation. Teams are also judged on efficiency, speed and teamwork. A 7-10 minute demonstration video will be submitted in lieu of an in person competition.

Demo Videos and resumes for all Team members must be submitted to SkillsUSA California by **February 6, 2021** (details to follow).

Regional Competition

Teams of two should be able to demonstrate the following:

1. Ability to use a simulated robotic arm with at least four (4) axis. This will be a virtual contest. No videos of live robotic arms will be allowed.
2. Ability to program the software to use with the robotic arm.
3. Provide documentation of the design process (including flowchart) and programming involved with the robotic arm demonstration.
4. Provide judge(s) with ONE copy of each participant's resume.

Notes:

1. The Intelitek ER-4u robotic arm will be used at the state contest (see below), and it is recommended that each team download and use RoboCell (see below). However, other proprietary software for virtual robotic simulations (Motoman by Yaskawa, Universal, Fanuc, etc.) will be allowed at the regional level.
2. Each team will use screen-casting software to demonstrate the programming of the robotic arm. Acceptable programs include Screencastify, Loom,

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Camtasia, and others. Teams will upload the video into YouTube and provide a link to the video with the other submissions.

3. Each video submitted must also be narrated by one of the team members. The narration will include demonstration of the software, including its programming.
4. Each video must be 7-10 minutes long. A penalty will be assessed for videos that are too long or too short.
5. The simulation of the robotic arm must contain the following:
 - a. The simulation must start and end at the Home Position
 - b. The simulation must include inputs and outputs. Inputs include, but are not limited to, gravity feeders, sensors, and other feeders. Outputs include, but are not limited to, conveyors, rotary tables, and stack lights.
 - c. Even though it is not required, special consideration will be given to programs that include variables and loops.
 - d. Program should include comments – but not necessarily on every line.

Deliverables for Submission – submitted by deadline (TBA).

1. Seven to ten minute (7-10 min.) screen-casted video – must contain the following:
 - a. Show flowchart in notes (notebook) – convert to pdf to allow showing on video.
 - b. Demonstrate the basics of the software.
 - c. Demonstrate how to program the robot.
 - d. Run the simulation, narrating if necessary.
2. All pdf's of engineering notebook and/or notes and flowcharts.
3. Resume of each participant.
 - a. All competitors must create a one-page resume using the SkillsUSA California provided format and submit an electronic copy.

Preparing for the State Contest

The Intelitek ER-4u, the robotic arm used at the national contest, will also be used at the state conference. It is recommended that participants demonstrate and/or use the ER-4u at their regional contest, but special consideration will not be given to those who

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do, nor will participants be penalized if they do not.

The ER-4u uses RoboCell as its programming software.

Link for downloading RoboCell:

<http://www.intelitekdownloads.com/Software/Robotics/ER-4u/>

If your school does not have an Intelitek ER-4u and would like to borrow one, or would like to schedule a training workshop for teachers and students at your site, please contact:

Mike Martin – Robotics and Automation Technology Event Coordinator:

mmartin@riversideunified.org or

Frank Paton – Paton Group, Altadena, CA, contest sponsor: frank@patongroup.com

Training sessions are TBA. Contact either of the above persons for more information.

This document may be updated periodically. For more questions, contact Mike Martin or Frank Paton at the emails provided above.

Clothing Requirements

SkillsUSA Official Dress is NOT required for Regionals. Clothing must be unbranded with no words, images, or logos. SkillsUSA or SkillsUSA California attire is recommended.

Note: Check the National Contest Guidelines and/or the updates page on the SkillsUSA website and the SkillsUSA California Competitive Events page:

- www.skillsusa.org/compete/updates.shtml
- <https://www.skillsusa.org/competitions/skillsusa-championships/contest-descriptions/>
- <https://www.skillsusaca.org/competitive-events-2>

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