

## OVERVIEW

Animatronics refers to a robotic device that emulates a human or an animal, or brings an inanimate object “to life.” Teams will produce an animatronics device complete with an appropriate display. The animatronics device must use control technology in its performance and fulfill the requirements of the theme to communicate, entertain, inform, demonstrate and/or illustrate a topic, idea, subject, or concept. Sound, lights, and surrounding environment are to accompany the device. The design problem for the current school year will be posted on the national TSA website under Competitions/Themes and Problems.

## ELIGIBILITY

One (1) team per chapter may participate; one (1) entry per team.

## TIME LIMITS

1. Participants are given five (5) minutes to set up their equipment prior to their presentation.
2. The presentation must last no longer than nine (9) minutes.
  - a. The presentation time begins when students present background information about the project and must conclude on or before the nine (9)-minute time limit.
  - b. Five (5) points will be deducted for every thirty (30) seconds over the time limit.
  - c. The judges’ interview is not considered part of the presentation time.
3. Semifinalists will participate in a LEAP interview that will last a maximum of five (5) additional minutes.

## LEAP

A team LEAP Report is required for this event and must be submitted at event check-in (see LEAP Program).

## ATTIRE

TSA competition attire is required for this event.

## PROCEDURE

### PRELIMINARY ROUND

1. Participants will check-in, sign up for a setup time, and submit a LEAP Report at the time and place stated in the conference program. No animatronics devices are required during signup/check-in.
2. At check-in, each team will select an initial presentation time from the available times posted. When selecting a demonstration time, teams should avoid conflicts with other events for which team members are registered.
3. Participants report for the presentation/interview at the selected demonstration time with the animatronics device and display. Only three (3) team members are allowed to set up equipment, present the project, and participate in the event-specific interview.
4. Judges independently assess the entries.
5. A list of twelve (12) semifinalist teams (in random order) will be posted.

### SEMIFINAL ROUND

1. Semifinalist teams report to the event area at the time and place stated in the conference program to sign-up for an interview time.
2. Semifinalist teams may be represented by no more than three (3) team members.
3. Semifinalist teams will respond to interview questions related to their LEAP Report.
4. Judges independently evaluate each team’s LEAP Report and interview.
5. The top ten (10) finalists will be announced during the awards ceremony.
6. No more than three (3) team members pick up their entry from the display area at the time and place stated in the conference program.

## REGULATIONS

### PRELIMINARY ROUND

- A. The display may not exceed 15" deep x 3' wide x 4' high. The device may extend beyond the dimensions of the display during the demonstration.
- B. The animatronics device must have three (3) or more separate movements.
  1. An exterior shell or skin is required. It must be removable in order to show the judges the internal components of the project.
  2. Fluid power, gearing systems, linkages, and/or cabling systems, etc., should be incorporated to aid in the movement of the device.
- C. Sound, lights, and sensors must be used in the project model.
- D. Control technology must be used during the performance.
- E. Fluid power **MUST** be used to aid in the movement of the animatronics device. If no fluid power is used, a ten (10)-point deduction will be incurred.
- F. A wet cell battery may not be used in the animatronics device.
- G. The animatronics device may use AC power, but the team will only have access to an AC outlet during the demonstration/presentation.
- H. **Should the device suggest anything that is inappropriate by language, sound, or movement, immediate disqualification will result.**
- I. A team that fails to appear for its demonstration forfeits evaluation.

### SEMIFINAL ROUND

- A. The semifinalist LEAP interview may include no more than three (3) team members.
- B. LEAP Requirements
  1. Team members document the leadership skills the team has developed and demonstrated while working on this event, and on a non-competitive event leadership experience.

2. Semifinalists will respond to questions about the content of their LEAP Report as part of their event-specific presentation/interview.
3. Specific LEAP Report regulations can be found in the LEAP Program section of this guide and on the TSA website.

## EVALUATION

1. Device performance
2. Device artanship
3. The team's presentation and response to the event-specific interview questions
4. The content and quality of the LEAP Report and interview

Refer to the official rating form for more information

## NOTES

Learn more about animatronics by visiting the following:  
[www.roborobotics.com/Animatronics/Animatronics.html](http://www.roborobotics.com/Animatronics/Animatronics.html)  
[www.animalmakers.com](http://www.animalmakers.com)  
[www.garnerholt.com](http://www.garnerholt.com)  
[www.dreamation.com/Animatronics.htm](http://www.dreamation.com/Animatronics.htm)

## STEM INTEGRATION

This event aligns with the STEM educational standards of Science, Technology, Engineering, and Mathematics.

## CAREERS RELATED TO THIS EVENT

- Amusement park robotics maintenance engineer
- Electronics technician
- Film industry special effects engineer
- Industrial designer
- Toy developer

# ANIMATRONICS

## 2019 & 2020 OFFICIAL RATING FORM

### HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

#### Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

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- Skins/shells are removable.
  - Interior skeleton and mechanism are accessible for inspection.
  - Completed LEAP Report is present.
  - ENTRY NOT EVALUATED

DEMONSTRATION INTERVIEW (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
<b>Organization</b> (X1)	Team seems unprepared and unorganized for the presentation/interview, with an illogical explanation of the project.	Team is prepared for the interview and is somewhat organized in its presentation to judges; team's presentation thesis is, for the most part, logical and/or clear.	Team's presentation/interview with judges is well organized; the interview is concise and logical, with a clear explanation of the development of the project.	
<b>Knowledge</b> (X1)	Team members seem to have little understanding of the concepts in their project; vague interview answers are provided.	Team members have a generalized understanding of the concepts discussed and answer questions adequately.	Evidence is clear that team members have a thorough understanding of the concepts discussed; they answer questions thoroughly.	
<b>Articulation</b> (X1)	The presentation and interview provide an unclear, unorganized, and/or illogical description of the project.	The presentation and interview offer a somewhat logical and easy-to-understand project description.	The presentation/interview provides a clear, concise, and easy-to-follow description of the project.	
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation/interview; participants' posture, gestures, and lack of eye contact diminish the delivery.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact result in an acceptable delivery.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
<b>Team participation</b> (X1)	Only one person in the group communicates with judges; there is little or no participation from other team members.	Team members all participate to some extent and seem to understand the concepts.	Team members seem to fully understand the concepts and share an equal role in the interview.	
<b>DEMONSTRATION INTERVIEW SUBTOTAL (50 points)</b>				

MODEL APPEARANCE (30 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
<b>Creativity</b> (X1)	Model lacks creativity; very few or no design principles are integrated in the model.	Some elements of creativity are evident, and most essential design principles are included and used somewhat effectively.	Model exudes creativity; essential design principles and elements are integrated.
<b>Aesthetics and artianship</b> (X1)	Work is unorganized and/or sloppy; model seems to be an afterthought and/or thrown together.	Some layout and design principles are integrated into the model, and aesthetics are adequate.	There is exemplary use of layout and design principles; artistic and aesthetic values are incorporated.
<b>Originality</b> (X1)	Model lacks imagination, originality, and artistic detail.	Model is somewhat innovative.	Model is inspiring, inventive, and resourceful.
<b>MODEL APPEARANCE SUBTOTAL (30 points)</b>			

Record scores in the column spaces below.


MODEL FUNCTION (60 points)			
<b>Skin and skeletal function:</b> There is no point value for the skin and skeletal function of the animatronics model. The model's skin must be removable in order to reveal skeletal function and mechanics located beneath the skin. If the skin is not removable then the entry will not be evaluated.			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
<b>Sound inclusion</b> (X1)	There is little or no sound included, or the design suggests that the inclusion of sound was an afterthought to the model.	Sound is included, and it somewhat contributes to the overall function of the model.	The inclusion of sound is creative and effectively contributes to the design and performance of the model.
<b>Light inclusion</b> (X1)	Light is minimal, or the design suggests that the inclusion of lights was an afterthought to the model.	Light is included, and it somewhat contributes to the overall function of the model.	The inclusion of a light creatively and effectively contributes to the model's design and performance.
<b>Sensor inclusion</b> (X1)	Sensors are included minimally, or the design suggests that the inclusion of sensors was an afterthought to the model.	Sensors are included, and they somewhat contribute to the overall function of the model.	The inclusion of sensors (and the interactivity that sensors allow) in the model is creative and effectively contributes to its design and performance.
<b>Control technology</b> (X1)	Little control technology is used during the performance.	Some basic control technology is used during the performance.	Advanced control technology is used during the performance; the model is fully autonomous.
<b>Fluid power system inclusion</b> (X1)	A fluid power system is included, but it functions inadequately or not at all.	A fluid power system is included, and it contributes somewhat to the overall function of the model.	The inclusion of a fluid power system(s) and the fluidity of movement that this system(s) provides in an animatronics model creatively and effectively contribute to the model's design and performance.
<b>Use of gears, linkages, cabling, etc.</b> (X1)	The use of gears, linkages, cabling, etc. is minimally apparent or improperly incorporated into the model; the team shows little understanding of how to properly use these systems in the model.	Most gears, linkages, cabling systems, etc. are incorporated and used properly in the model; there is evidence of an adequate understanding of the systems.	Efficient and varied use of gears, linkages, cabling systems, etc. is apparent and properly incorporated in the model; there is evidence of a complete understanding of these systems.
<b>MODEL FUNCTION SUBTOTAL (60 points)</b>			

Record scores in the column spaces below.


**TIME DEDUCTIONS**

A five-(5) point deduction will be incurred for every thirty (30)-second interval over the allotted time. Multiply the number of intervals by five (5) and record the total deduction in the column to the right.

# of intervals X 5 = \_\_\_\_\_ (total deduction)

Rules violations (a deduction of 20% of the total possible points in the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

**PRELIMINARY SUBTOTAL (140 points)**

**SEMIFINAL INTERVIEW (14 points)**

CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
<b>LEAP Report/ Interview</b> (10% of the total event points)	The team's efforts are not clearly communicated, lack detail, and/or are unconvincing; few, if any, attempts are made to identify and/or incorporate SLC Practices and Behaviors.	The team's efforts are adequately communicated, include some detail, are clear, and/or are generally convincing; identification and/or incorporation of SLC Practices and Behaviors is adequate.	The team's efforts are clearly communicated, fully-detailed, and convincing; identification and/or incorporation of the SLC Practices and Behaviors is excellent.

Record scores in the column spaces below.

**SEMIFINAL INTERVIEW SUBTOTAL (14 points)**

Rules violations (a deduction of 20% of the total possible points in the semifinalist sections above) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

**SEMIFINAL SUBTOTAL (14 points)**

**To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary. TOTAL (154 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

**JUDGE**

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_

# ANIMATRONICS

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Assistant for check-in, one (1)
- C. Timekeeper, one (1)
- D. Judges:
  - 1. Preliminary round, two (2) or more
  - 2. Semifinal round, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and for each judge
  - 2. TSA Event Coordinator Report
  - 3. List of judges/assistants
  - 4. Pre-populated flash drives for judges
  - 5. Stick-on labels for entries, as needed
  - 6. Results envelope
  - 7. Envelope for LEAP Reports
  - 8. LEAP Interview Judging Protocol
- B. Tables for presentation
- C. Table and chairs for judges

### RESPONSIBILITIES

#### AT THE CONFERENCE

1. Attend the mandatory coordinator's meeting at the designated time and location.
2. Report to the CRC room and obtain the coordinator's packet; check the contents.
3. Review the event guidelines and check to see that enough judges/assistants have been scheduled.
4. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.

5. At least one (1) hour before the event is scheduled to begin, meet with judges and review the time limits, procedures, and regulations and clear up any questions or misunderstandings. If questions arise that cannot be answered, speak to the CRC event manager before the event begins.

#### EVENT CHECK-IN

1. Check in entries and collect LEAP Reports at the time and place noted in the conference program.
2. Have each team sign up for a specific time for its presentation/interview (within the time frame designated for the event).
  - a. Once each team has scheduled a presentation/interview time, make sure that the participants understand that they are to return fifteen (15) minutes before their scheduled presentation/interview time.
  - b. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.
  - c. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.

#### PRELIMINARY ROUND

1. Conduct the event-specific interview.
2. Judges independently assess each team's demonstration presentation/interview.
3. Judges may take notes, but scoring occurs only after all team members have left the event room.
4. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
  - a. To deduct twenty percent (20%) of the total possible points in this round or
  - b. To disqualify the entry
  - c. The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.
5. Judges determine the ranking of the twelve (12) semifinalists.

6. Review and submit the semifinalist results and all related forms in the results envelope to the CRC room.

### SEMIFINAL ROUND

1. At least one (1) hour before the event is scheduled to begin, meet with judges and review the time limits, procedures, and regulations and clear up any questions or misunderstandings.
2. Each semifinalist team will sign up for a specific time for its interview (within the time frame designated for the event). Inform teams that they are to return fifteen (15) minutes before their scheduled interview time.
3. Manage the LEAP interviews.
4. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
  - a. To deduct twenty percent (20%) of the total possible points in this round or
  - b. To disqualify the entry
  - c. The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.
5. Judges determine the ten (10) finalists and discuss and break any ties that affect the top three (3) placements. (Determine the procedure for breaking ties before the onsite competition begins.
6. Review and submit the finalist results and all related forms in the results envelope to the CRC room.
7. If necessary, manage security and the removal of materials from the area.