Santa Clara University
Maker / Innovation Program

Kinetic Art Design Challenge

Inspired by and in Association with the showing of
*The Mechanical Horse*, by Adrian Landon

In cooperation with the City of Santa Clara Cultural Commission, a public art project entitled *The Mechanical Horse*, by artist Adrian Landon, will be on display during the Fall 2023 quarter in the lobby of the SCDI building. *The Mechanical Horse* is a beautiful, interactive, life-sized sculpture that gallops in place based on powered mechanical movement.

Inspired by this showing, we are pleased to issue an innovation design challenge to the Santa Clara student community. In this challenge, students are invited to design and fabricate unique, artistic devices that incorporate mechanical motion. These devices should showcase the motion of animals, people, natural objects, characters, and/or man-made objects (abstract art is not within the scope of this challenge). Entries will be evaluated by a panel of judges, and prizes of $250 will be awarded to the top entry in each of the following categories:

- **Passive Artistic Devices**: These devices have no inherent electrical power, and move due to physical interaction (like a child pushing/pulling a toy), mechanical energy stored in springs or gravity-driven weights, the wind, etc.
- **Powered Artistic Devices**: These devices move primarily due to electricity-driven motors or other active actuators.
- **Reactive Artistic Devices**: These devices must react/interact with people or aspects of the environment (motion, light, etc.) without physical contact.

Entries will be judged on their aesthetic nature, the quality of their design, and their creativity and innovation. Competition timeline, rules, and considerations are included below.
Competition Details

Key People:
- Competition Manager: Dr. Christopher Kitts
- Competition Manager and Design Mentor: Dr. Michael Neumann, maneumann@scu.edu
- Advisors and Judges:
  - Mr. Takeshi Moro, Dept Chair Art and Art History
  - Mr. Adrian Landon, Artist of The Mechanical Horse
  - Additional judges to be arranged

Competition Information: Competition information will be posted on the Maker Lab web site at https://www.scu.edu/engineering/makerlab/. This will include this competition document, links for registration and submission, and additional competition updates.

Timeline:
- Monday, Sept 25: Competition Begins (Kickoff Reception for The Mechanical Horse)
- Friday, Oct 13: Students must register their intent to participate via the link on the maker lab web site
- Thursday, November 16: Submissions are due no later than 5:00 pm, with devices delivered to the Maker Lab, and written summaries (.pdf file) and video links submitted to the competition email address as provided on the maker lab web site
- Week of Dec 4 (date TBA): Announcement of winning entries.

During the competition period (and available in general throughout the academic year), resources for student participants will include:
- Maker Lab open hours: ~35-40 hrs/wk of open hours time for Lab use.
- Maker Lab training: numerous open training sessions each week to teach and certify students in the use of the Lab and the operation of its equipment, such as laser cutters, 3d printers, hand tools, etc.
- Mentoring hours: Mondays, 2:00-5:00 pm, Dr. Neumann will have help hours in the maker lab to provide mentoring and guidance to teams in their efforts.
- Maker Lab web site: This site will provide updates on the competition.

Inspiration: There is a deep historical tradition of mechanical art. If participants are looking for inspiration, they are encouraged to review examples such as:
- The artist, Adrian Landon, invites you to watch the documentary of the making of another one of his pieces, "Wings of Glory", directed by Sarah Leriche. Wings of Glory was featured at Burning Man in 2019.
- The kinetic sculptures of Theo Jansen, creator of the Strandbeest.
- Creations from the realm of Automata, such as da Vinci’s Knight and Lion,
- Simple mechanical toys, such as those featured here (with great design advice).

Submissions: Submissions will consist of 3 elements:
1. The device itself, to be dropped off at the Maker Lab;
2. A short written summary of the device, no more than 3 pages, to be submitted via email. This summary should include:
   a. The name of the entry
   b. The names of student participants
   c. A paragraph providing a high-level description of the device, its inspiration, and any novel elements of the design
   d. A 1-2 sentence statement summarizing how the design creates “artistic value”
   e. A photo showing the entire device
   f. If desired, a sequence of sketches, diagrams, renditions and photos showing the evolution of the design concept as it matured
   g. A description of how the device was manufactured; showing pictures of key steps in the fabrication and assembly process is highly recommended.
h. A summary of the approximate costs of materials, machine time (if laser cutters, 3d printers and/or CNC machines where used), and personnel time.

3. The link to a video no longer than 2 minutes, posted to YouTube, which reviews specific elements of the submission, to be submitted via email. This video should include:
   a. A brief statement of the name of the device
   b. A demonstration of device motion (showing the passive, powered, or reactive nature)
   c. A brief visual/verbal “tour” of the device, pointing out key parts and/or characteristics of the device
   d. If not obvious, a review of how motion is implemented (e.g., how forces/torques propagate through the system from the stimulus - like a motor - to artistic elements - like the legs of a horse).

Guidelines:

• Entries may be by an individual or a team; all participants must be currently registered students at Santa Clara University. All students are welcome to submit, to include both undergraduate and graduate students, students from the College and all Schools, etc. Interdisciplinary teams are highly encouraged, and teams should consider involving members with expertise in conceptual design, artistic representation, maker-style manufacturing, project management, etc.

• Students are highly encouraged to use the tools and advising resources available through the Maker Lab / Innovation Zone, in SCDI. Training on how to use tools is provided free of charge, requires no prior knowledge, and is available numerous times each week. Staff and teaching assistants are also available to provide advice on approaches for fabricating parts, use of tools/machines, etc. Participants are highly encouraged to review their fabrication plans with Maker Lab personnel prior to manufacturing pieces.

• Material costs for entries are the responsibility of the participants, with the possible exception of a modest amount of 3D printer filament, which will be funded through the Maker Lab.

• Once entered, students will receive email from competition managers regarding any relevant updates, clarifications, etc.

• Teams should plan to use the Maker Lab during posted open hours; additional hours/sessions are not planned to support this competition.

• Depending on student status and award amounts per student, cash prizes may be subject to tax withholding and may be paid via a university check. Prize funds may be provided in the form of gift cards. The processing of awards may take several weeks.

• Abstract art, while beautiful and compelling, is not within the scope of this competition. Furthermore, there is an expectation that the devices are beyond the realm of basic mechanical clocks, music boxes, etc. Physical motion that enhances the artistry of the device is the focus.

• Motion should be macroscopic and easily apparent.

Rules:

• As with product development in the real world, elements of this competition may change over time. Teams will be updated via email with news or updates regarding the contest, rules, advice and answers to questions, etc.; email updates will be sent to designated team points of contact (so, that person should check their email routinely);

• Teams agree to abide by the decision of the judging panel and competition administrators regarding competition rules, results, and any approved changes/exceptions; the decisions of the judging panels and competition managers are final.

• Designs must be unique creations and may not violate copyright law; it is inappropriate to use existing designs available on the internet or elsewhere. It may be appropriate to emulate the elements of the mechanical transmissions that you may find, but if you are unsure please contact competition staff. There are also resources that provide examples of many different types of mechanisms and transmission without being applied to any particular artistic creation. Use of those designs and variations of those designs is encouraged (e.g., finding general references/designs on elements such as gear boxes, belt/chain drives, rack and pinion mechanisms, etc.).

• The incorporation of any SCU branding elements must comply with relevant policies and should be approved by personnel from University Marketing and Communications.
• Students may only participate on one team.
• Students will specify a single entry category (passive, powered, reactive) for their device, and judging will be limited to that category, even if it is possible for the device to be submitted in multiple categories.
• Device requirements:
  o no larger than 2’ x 2’ x 4’ unless explicitly approved by competition managers.
  o self contained, with no projectiles or leaks, and compliant with any/all university safety guidelines.
  o no use LiPo batteries due to safety challenges
  o if powered, must use standard outlet power
  o be self-evident in terms of use and powering/winding
• Students agree to participate in any surveys regarding the educational nature of the competition with the knowledge that aggregate results may be published;
• Ownership of the pre-existing underlying intellectual property of the entry remains the property of the team entering the contest, subject to Santa Clara University’s rights to reprint, display, reproduce, perform, use, and exhibit the entries and designs for this event and for Santa Clara University’s future marketing and advertising purposes and events. By participating in the contest, each entrant grants to Santa Clara University a non-exclusive, worldwide, fully paid, royalty-free, perpetual, transferable license to reprint, display, reproduce, perform, use, and exhibit (including the right to make derivative works of) the entry and materials and information submitted on and in connection with the contest. Each entrant warrants that the entry and materials and information provided do not contain confidential information and do not violate any laws or regulations.

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This contest is being conducted with financial and administrative support from Ciocca Center for Innovation and Entrepreneurship, the Kern Entrepreneurship Education Network (KEEN), and the Santa Clara University School of Engineering.