



# The BigBots are Coming

## How you can participate

For more information about how YOU can participate in Robot 250 visit [www.robot250.org](http://www.robot250.org)

## You're #1

*Ian Ingram*



Ian Ingram has a response to all those crazy Pittsburgh sports fans who proudly wave their “We’re #1” foam hands. He said, “You’re #1.” And he is saying it, not only to sports fans, but to anyone, and in a very unusual way, with a giant robotic foam hand he created for Robot 250.

Better known as a BigBot, Ingram’s 12-foot “You’re #1” hand will be installed atop The Andy Warhol Museum and point to people in the robot’s sight line who are blocks—or miles—away when they touch a smaller version of the hand at various kiosks around the city.

Ingram said his hand points out all the good around us.

“It’s a sports fan’s foam hand that says, not ‘We’re #1,’ but ‘You’re #1.’ And you are number one! And you over there, you are also number one,” he said.

“Why? Pittsburgh deserves a hand. A hand that manifests the grip of Pittsburgh’s unique ethereal essence on all for us, its inhabitants, no matter our public stance on its state,” Ingram said.

Ingram, a senior research associate and artist-in-residence at CMU was also a facilitator for several community workshops over the past year, where participants built their own robots based on what they thought would be good for their community.

He’s not really worried about individual feelings or reactions to his creation, but does suggest a deeper purpose for his BigBot.

“Let’s let those who’ll be cynical about this, about its liberal application of number-oneness and its populist color scheme, be cynical – Let’s let those who see it as ironic, have their irony... But let’s in general, be joyous,” he said. “Let’s wonder about where indeed the giant hand... is pointing. And let’s wander to that spot ourselves and in that journey discover places we have never been before, some well-known and in plain view, some secret and tucked away.”

## “Prototype for an infinite array of semi-autonomous percussive devices”

*Keny Marshall*

The Game of Life will be “chirped” out at the Mattress Factory Museum this summer, by a BigBot created by artist Keny Marshall for Robot 250.

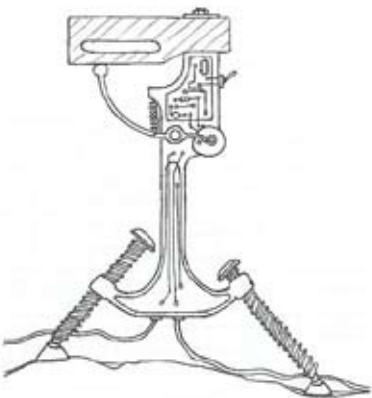
The installation is entitled “prototype for an infinite array of semi-autonomous percussive devices,” but can also be called “Crickets.”

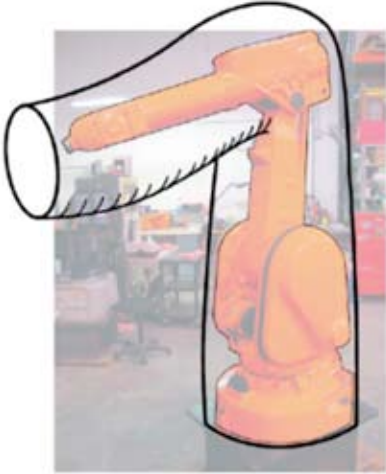
“Crickets is a group of small robotic sculptures, each connected to its immediate neighbors via thin wires, that together form a net of robotic life that spreads across the Garden and over nearby structures,” said Marshall.

“Communicating to their neighbors via signals in the wires, the robotic creatures activate and deactivate each other using Dr. John Conway’s rules for The Game of Life,” Marshall said. “When active, the creatures thump their noisemakers. When inactive, they are silent.”

The overall structure of the interaction resembles the way dogs talk to each other yard-to-yard...but much faster, in what Conway called, “emergent complexity.” Conway’s rules are very basic. As applied by him, cells or things in proximity to one another could live, die and come back to life, dependent on the number of neighbors it has.

Each unit will have a single wooden knocker that it thumps in a given pattern depending on whether it is alive or dead. The result will be an ever changing harmony of cricket sounds, and robotic interactions throughout the garden.



**Double-Taker***Golan Levin*

Ever feel like you're being watched by someone—or something?

If internationally renowned artist Golan Levin has his way, you will be watched, especially if you visit the Pittsburgh Center for the Arts this July.

Golan's whimsical "Double-Taker (Snout)" sculpture, a BigBot commissioned under Robot 250, will be watching you from atop the center's roof on Fifth Ave in Oakland. Passers-by will be subjected to looks, then double-takes, as if the robot is following their movements.

"This large outdoor interactive robot deals in a whimsical manner with the themes of human eye contact, gestural choreography, subjecthood and autonomous surveillance," said Levin.

"Double-Taker" consists of a seven foot-long repurposed industrial robot arm, which will be covered in a flexible reinforced-fabric cylinder. This animated arm, which will resemble an inchworm or elephant's trunk, will be controlled by a real-time vision-based computer system.

"The unique goal of this sculpture is that it will perform convincing double-takes at visitors, meaning the specific gesture in which the subject looks at, then looks away from people, giving the impression it has turned its attention to other things," said Levin. "But then it abruptly looks back at the visitor, as if it had missed some important detail and couldn't be certain about what it had really seen."

**Green Roof Roller Coaster***Gregory Witt and Joey Hays*

Though quite good for the environment, trees and plants atop large buildings often seem out of place and out of reach, just a static patch of green in a cold, gray and lonely forest of concrete.

Artists Greg Witt and Joey Hays have found a way to alter that image and add movement to it by creating "Green Roof Roller Coaster" as one of the BigBots for Robot 250, which will be on display at the Children's Museum of Pittsburgh in July.

"This BigBot is an old-style wooden roller coaster for trees," said Witt. "Green roofs are typically built to utilize plants and their ability to insulate a building, retain rainwater, convert carbon dioxide into oxygen and harbor wildlife."

This robotic roller coaster does all that while providing "entertainment" for the tree, monitoring and processing various environmental and physiological variables and keeping viewers informed of how "entertained" the tree is at any given time.

"The tree will be equipped with an array of sensors including: humidity, CO2, vibration and leaf conductance. Embedded in the car will be a soil moisture sensor, an accelerometer and a web cam, all connected to an on board computer that will send the data to a kiosk located in front of the museum," Witt said.

Visitors who come to the Children's Museum can visit the kiosk to start the roller coaster, view live data including g-forces, vibration levels and tree happiness, as well as view real-time images of the tree in motion.

**Look-See Tree***Ally Reeves*

This summer, as the native trees entice city park goers to rest under the canopy in the shade, they may be even more enticed by "The Look-See Tree," an unusual roving tree.

"The Look-See Tree" is actually a mobile artwork housing five motion activated mini-theaters created by local artist Ally Reeves, and it's one of the Robot 250 BigBots people will see at various venues throughout the city in July. "The Look-See Tree" will travel with the Citiparks Roving Art Cart.

The small theaters in "The Look-See Tree" contain robotic animals in somewhat natural settings within a large tree structure.

From afar, viewers will see a large sparsely limbed tree trunk lying on its side, supported by wheels, and connected to a bike. As they approach, people will notice the leaves of the tree, which sprout and are withdrawn repeatedly and irregularly, implying an unusual fluctuation in seasons.

Closer inspection will reveal several glowing hollows in the tree trunk. When viewers peak in, they will see fictional animals that will respond to their presence by either beginning or ending a gesture—hiding, vocalizing, shifting, or jumping—and otherwise reacting to visitors.

"The term 'look-see tree' is taken from a name given to trees that have been converted to fire watch or simply observation towers. This name was of interest to me because it designates a tree as a place to go for observation and contemplation in this case, however, the view is inside the tree rather than beyond it," said Reeves

**Reach, Robot***Grisha Coleman with Frank Broz*

Many of the pedestrians hurrying through PPG Plaza in July may not notice anything different. Many may see “it” but think it’s some sort of construction—or think nothing of it. But those who take their time and really listen will catch on, and just may be able to manipulate “it.”

“It” is actually a robotic installation, called “Reach, Robot,” and a giant web, if you will, that will produce musical sounds, depending on where people are located in the plaza. It’s part of Robot 250 and will be active from July 11–27.

“‘Reach, Robot’ will work as a sound installation, a visual/kinetic installation and a domain for public interaction and participation,” said Grisha Coleman, a research fellow at Carnegie Mellon’s Studio for Creative Inquiry.

Coleman is using technologies that include laser and pressure sensing devices, a series of strands, or webbing made from PPG-manufactured continuous strand fiber glass and suspending them approximately 10 feet above the heads of PPG plaza pedestrians.

“By walking through or gathering in different areas of the Plaza, pedestrians will ‘activate’ this confluence of webbing with sensing technology, triggering a series of sound segments that together create an ambient symphonic environment, based on an original contemporary score that references and samples the rich history of Pittsburgh’s African American heritage,” said Coleman.

**Rise and Fall***Jennifer Gooch*

We see flags every day, and it’s not just “Old Glory.” When we see them on television, they seem to encapsulate a whole group of people who just happen to live within the same borders.

Some are flying high (or low) in front of a building we may pass. Some we may see on our television or on a nightly news program. Some may be draped on a coffin, but they always say something about the state of a nation or group of people.

The meanings attached to flags will be explored this summer (appropriately) at Flagstaff Hill, where CMU art student Jennifer Gooch’s robotic sculpture “Rise and Fall” is on display. The sculpture is one of 11 BigBots that will be on display July 11–28 as a part of Robot 250.

Gooch said the installation “metaphorically explores nationalism, allegiance, identity and the cycle of dominance and defeat throughout civilization’s history.”

“The flags will be of a stressed gray or tan material and without symbol or demarcation. Rusted steel poles and the structure’s façade of reclaimed wood will give the structure a weathered impression. The layers of lath, wood, and grass will create an aspect of strata, of layers of time – things built and neglected, decayed and covered. The flag poles themselves jut from the structures as if they pushed up from below, disrupting the ground around them,” Gooch said.

“Attached to motorized mechanisms, the flags symbolically cycle up and down their poles, creating a sense of the status of the ‘state’ they represent and a fluid position within the rank of the whole,” said Gooch. “Together they build a neutral representation of the flux of civilizations. The flags’ movement will have several programmed loops. One loop serves as each flag’s specific cycle of raising and lowering. Another loop, when triggered by an approaching viewer, sends the flag to the top. After a time of being raised, the flags will return to their original programmed loop.”

**Mower***Osman Khan*

Anyone in the city or suburbs who has a big lawn knows the tedium of mowing it weekly. Wouldn’t it be nice if you were allowed to have livestock in the yard to keep the grass under control? Well, yes and no—there’s always the dung to deal with.

Visiting Assistant Professor at Carnegie Mellon’s School of Art, Osman Khan, may have an answer to that dilemma with his “Mower,” a robotic sheep that will be on the lawn of Phipps Conservatory and Botanical Gardens from July 11–28.

Khan’s “Mower” is one of the BigBots created for Robot 250. He said he created it, “with reference to Philip K. Dick’s “Do Androids Dream of Electric Sheep?” and allusions to green/sustainable practices of using sheep to maintain lawns in, for example, city parks in Curitiba, Brazil.”

“The project will be to place a robotic sheep on a lawn... that will autonomously roam the lawn, trimming it as it goes. The mouth of the sheep will contain a grass-mowing device, and the head of the sheep will be outfitted with navigational and obstacle avoidance sensors. As well, the sheep will have quadrupedal walking mechanics,” Khan said.

**Shelter***Garth Zeglin*

When we think of robots we often think of a noisy conglomeration of steel, wires and moving mechanical parts—hardly something we would think about putting in a library.

Garth Zeglin, a researcher at Carnegie Mellon University's Robotics Institute, has changed that notion with his robotic sculpture, "Shelter." The sculpture will be on display as a part of Robot 250 from July 11–28 in the International Poetry and Quiet Reading Room inside the Carnegie Library of Pittsburgh's main branch in Oakland.

"Shelter" is a fabric sculpture comprised of two moving, concentric tent-like silk forms suspended over a round couch.

"The bottom panels of the structure are low and flutter in the air as the structures rotate," Zeglin said. "Visitors should feel welcome to step under them and sit on the couch to experience the piece at close proximity, touching the fabric and seeing the interplay of the light, fabric and motion."

"The piece does not move continuously; it is controlled by a computer and sensors, and each tent can independently stop or rotate in either direction in response to the passage of time, the presence of people, or changes in lighting," Zeglin said. "The basic behavior carries out a slowly varying kinetic composition."

Zeglin calls "Shelter" a kind of fabric robot. He said visitors who touch the piece and sit on the couch will indirectly affect the behavior of the piece as it attempts to compensate for their disturbance.

"The overall effect is intended to provide a small sanctuary—a colorful, peaceful shelter in the midst of the library," said Zeglin.

**ABB Basketball Arm***Pete Feher*

Although Pittsburgh doesn't have a professional basketball team, there is an all-star in the city that shoots free throws with 98 percent accuracy, enough to make the most celebrated NBA players a little green with envy.

He "plays" for Carnegie Science Center and is actually, well, a robot. He's better known as the ABB Basketball Arm, and in a previous life spent his days welding automobiles before being repurposed by the Carnegie Science Center.

Visitors to the Science Center can try their hand at shooting baskets with the bright orange robot by adjusting the angle and velocity of the ball's flight at an adjacent kiosk. Visitors quickly learn they are not ready for the NBA compared to the robotic arm.

The basketball shooting robot was originally a part of the Science Center's touring exhibition Robotics. Created in 1996, Robotics has visited more than 20 cities and has been experienced by over 3.5 million people around the country.

The ABB arm returned to the Science Center in 2007 and will be part of the new roboworld exhibition opening at the Science Center in spring 2009.

The ABB Basketball Arm is also one of the "BigBot" attractions for Robot 250.