



## CARNEGIE SCIENCE CENTER

One of the four Carnegie Museums of Pittsburgh

April 21, 2009

**For Immediate Release**

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### **ROBOWORLD™ REVEALED**

***Carnegie Science Center provides the first look at experiences and exhibits in the world's largest robotics exhibition, opening June 13, 2009***

PITTSBURGH, April 21, 2009 — Carnegie Science Center today revealed plans and exhibit details for *roboworld™*, the world's largest and most comprehensive permanent robotics exhibition, opening June 13, 2009.

The \$3.5 million exhibition will permanently occupy a 6,000 square-foot exhibit area on the second floor of the Science Center previously used for touring exhibitions and will feature several dozen hands-on, interactive exhibit stations focusing on the themes of robotic sensing, thinking, and acting.

*“roboworld™* will showcase the latest in robotics technology — much of which has been developed in this region — and help visitors understand the tremendous impact robotics has on everyday life for each and every one of us,” said Ann Metzger, Co-Director of Carnegie Science Center. “For the past several years, we have been working with partners, both local and around the world, to shape and mold this exhibition into a comprehensive examination of robotics technology and the wide array of careers involved in this cutting-edge research and industry. We are excited to finally reveal the amazing and exciting exhibits and experiences that comprise the world-class, one-of-a-kind robotics exhibition that is *roboworld™*.”

“For more than 20 years, Carnegie Science Center has been providing robotics education for children in Pittsburgh,” said Ron Baillie, Co-Director of Carnegie Science Center. “From a wide variety of classes and camps to a touring robotics exhibition that has been experienced by more than 3.5 million people around the country, we have witnessed first-hand the significant role robotics can play in sparking students’ interest in science, technology, math, and engineering careers. *roboworld™* will provide a gateway to these careers for students, resources for educators, and opportunities for parents to explore cutting-edge technology with their children in an innovative, hands-on way unlike anything currently available.”

The three robotic themes of thinking, sensing, and acting are explained in the exhibition through the use of innovative robots, video, hands-on exhibit stations, and artifacts, from a repurposed industrial arm that shoots basketballs to a wide variety of sensors commonly used in robotics with which visitors can interact.

In addition to the several dozen hands-on exhibits, **roboworld™** features two specialized areas allowing visitors to interact with robotics technology as it is being developed and to visit with some of the world's most famous robots. Within the **roboworld™** exhibition gallery is a dedicated Robot Workshop providing companies and roboticists the opportunity to test their latest innovations and for Science Center visitors to experience the latest in robotics technology and interact with scientists working in the field. This space will also serve as an area for visitors to create and test their own robots.

Robots have long had a presence in science fiction and popular culture, and **roboworld™** will pay homage to their influence through a section of the exhibition dedicated to the *Robot Hall of Fame®*. Created in 2003 by the Carnegie Mellon University School of Computer Science, the Hall of Fame recognizes excellence in robotics technology worldwide and honors the fictional and real robots that have inspired and made breakthrough accomplishments in robotics. Each year a jury of scholars, researchers, writers, designers, and entrepreneurs select the real and fictional robots that will be honored by the *Robot Hall of Fame®*. Inductees have included Honda's ASIMO humanoid robot, "Star Wars" robots R2-D2 and C-3PO, NASA's Mars Sojourner, HAL 9000 from Arthur C. Clarke's "2001: A Space Odyssey," Gort from "The Day the Earth Stood Still," and the Unimate manufacturing arm. **roboworld™** provides the Hall of Fame a permanent home for these and other inductees. The Hall of Fame exhibits will be updated as new inductees are selected.

Carnegie Science Center has been a leader in developing robotics-oriented exhibitions and educational programming for more than 20 years. In 1986, the Science Center created *Real, Live Robots*, a six-week exhibition of cutting-edge robotic technology attracting nearly 100,000 visitors, the first such exhibition ever presented for public audiences in the U.S. Since then, the Science Center has offered an extensive slate of robotics classes and camps that now serve nearly 1,000 students annually in grades 2-8. The Science Center developed a major touring exhibition entitled *Robotics* in 1996; this exhibit has now visited more than 20 cities and has been experienced by more than 3.5 million people around the country.

The Science Center is enhancing existing robotics programs and developing new learning opportunities tied to **roboworld™**, including classes and outreach programs.

In addition to partnering to provide a permanent home for the *Robot Hall of Fame®*, Carnegie Mellon University's Entertainment Technology Center and Robotics Institute are exhibition partners for the development of **roboworld™**, assisting in the planning and construction of several exhibit stations within the gallery. Representatives from high-tech companies 4moms, Aethon, Automatika, IBM, Integrated Industrial Technologies, Inc., and educational institutions California University of Pittsburgh, the University of Pittsburgh, and Robert Morris University have also participated in the development of **roboworld™**.

**roboworld™** is made possible in part by \$1 million leadership gifts from The Grable Foundation and The Bozzone Family Foundation.

Robotics is one of six areas of focus in Carnegie Science Center's long range plan to enhance visitor experience and educational opportunities at the Science Center and showcase regional technology.

**About Carnegie Science Center**

Carnegie Science Center is dedicated to inspiring learning and curiosity by connecting science and technology with everyday life. By making science both relevant and fun, the Science Center's goal is to increase science literacy in the region and motivate young people to seek careers in science and technology. One of the four Carnegie Museums of Pittsburgh, the Science Center is Pittsburgh's premier science exploration destination, reaching more than 700,000 people annually through its hands-on exhibits, camps, classes and off-site education programs.

**About Carnegie Museums of Pittsburgh**

Founded by Andrew Carnegie in 1895, Carnegie Museums of Pittsburgh is a collection of four distinctive museums dedicated to exploration through art and science: Carnegie Museum of Art, Carnegie Museum of Natural History, Carnegie Science Center, and The Andy Warhol Museum. In 2008, the museums reached more than one million people through exhibitions, educational programs, outreach activities, and special events.

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**CARNEGIE SCIENCE CENTER AND CARNEGIE MELLON UNIVERSITY**

**ANNOUNCE FIVE NEW INDUCTEES TO ROBOT HALL OF FAME®**

***Hall of Fame to Have Permanent Home at Carnegie Science Center in 2009***

PITTSBURGH, April 21, 2009 — Carnegie Science Center and Carnegie Mellon University announced today the 2010 class of inductees into the *Robot Hall of Fame*® at a press preview of *roboworld*™, the Science Center's new robotics exhibition opening June 13 and the permanent home for the Hall of Fame.

The five members of the class of 2010 are:

- NASA Mars Rovers Spirit and Opportunity
- iRobot Roomba
- DaVinci Medical Robot System
- Huey, Dewey, and Louie, from the 1971 film "Silent Running"
- T-800 Terminator, from the 1984 film "The Terminator"

The *Robot Hall of Fame*®, created in 2003 by the Carnegie Mellon School of Computer Science, recognizes excellence in robotics technology worldwide and honors the fictional and real robots that have inspired and embodied breakthrough accomplishments in robotics. Robots are selected for recognition and induction by a jury of scholars, researchers, writers, designers and entrepreneurs.

The four robots announced today will be officially added to the *Robot Hall of Fame*® at an induction ceremony at the Science Center in 2010.

“As with our last group of inductees, real robots again outnumber the fictional ones,” said Matt Mason, director of Carnegie Mellon’s Robotics Institute. “We in the robotics field believe this is the beginning of a trend, as robots such as Spirit and Opportunity, Roomba, and DaVinci are approaching or even exceeding performance levels that once were only imagined.”

**T-800 Terminator**, the cyborg assassin portrayed by Arnold Schwarzenegger in 1984’s “The Terminator,” has capabilities still well beyond anything today’s roboticists could cook up. Designed by the military computer Skynet, it can withstand repeated shotgun blasts, crash through walls, and keep running for 120 years on its power cells. But the T-800 also is notable for its intelligence; it can speak naturally (or at least as naturally as Schwarzenegger), read human handwriting, and use its machine learning software to grow more knowledgeable with every contact made with humans. The signature line, “Hasta la vista, baby,” came from T-800’s ability to learn and mimic human behavior.

"The Terminator represents humankind's greatest fear of robots: that they may one day turn on us, their creators, and seek to exterminate the human race," said Don Marinelli, executive producer of Carnegie Mellon’s Entertainment Technology Center. “Terminator is a low-budget science fiction movie that continues to resonate with reviewers and critics alike. So much so that in 2008, The Terminator was deemed ‘culturally, historically, or aesthetically significant’ by the Library of Congress and selected for preservation in the United States National Film Registry."

**Huey, Dewey, and Louie** are the names given to three service drones by Freeman Lowell, the lone surviving crewman of the space freighter Valley Forge in the 1971 movie “Silent Running.” The wheeled robots are far closer in capability to today’s mobile robots than to T-800, helping Lowell maintain trees and plants that have become extinct on Earth. Carnegie Mellon, for instance, now has two federally sponsored programs for exploring the use of robots in apple orchards and orange groves. In the film, Lowell, played by Bruce Dern, eventually tries to make the three drones more like humans, teaching them to play poker, plant trees, and even perform surgery on his injured leg.

**Spirit and Opportunity** have outperformed the expectations of NASA engineers. The pair of wheeled rovers landed on Mars five years ago for what was to be 90 days of exploration that might cover two-thirds of a mile. Today both are still at work with more than five miles on Spirit’s odometer and close to 10 on Opportunity’s. Spirit is ailing, with one of its six wheels busted and operating on just 30 percent of normal power because of dust on its solar panels. Spirit continues running, however, as it explores a plateau called Home Plate in the valley known as the Inner Basin. Opportunity is crater hopping on the other side of the Red Planet, driving between several craters only a yard or two in diameter as it makes its way to a large crater called Endeavour.

**Roomba**, a product of iRobot Corp., isn’t nearly as exotic as Spirit and Opportunity. Martian dust doesn’t cling to Roomba; rather, the robotic vacuum spends its time sucking dust and other grime off of carpets, floors, and rugs. With more than 2.5 million of the disk-shaped robots sold worldwide since 2002, it is one of the most successful consumer robots to date. Users are known to name their Roombas and have even established Roomba websites and Yahoo! discussion groups.

**DaVinci**, built by Intuitive Surgical Inc., operates on a totally different scale than the other robots in this class of inductees. Rather than ranging far and wide, this robotic system helps surgeons do intricate surgery on a very small scale. DaVinci is used during minimally invasive surgery, sometimes called keyhole surgery. The robot itself is unable to make decisions on its own or to make automatic incisions. But the robot translates the movements of the surgeon's hands into precise micro-movements, manipulating tiny surgical instruments that are inserted into the patient through one-centimeter-diameter incisions. More than 200 are in use worldwide for procedures such as repair of the heart's mitral valve, removal of the prostate gland, and weight-loss surgery.

### **About Carnegie Science Center**

Carnegie Science Center brings the world of science alive for visitors of all ages. One of the four Carnegie Museums of Pittsburgh, the Science Center features more than 400 hands-on exhibits, three live demonstration theaters, a four-story IMAX<sup>®</sup> Dome theater, an interactive full-dome digital planetarium, a science-of sport exhibition, a Cold War submarine moored on Pittsburgh's Ohio River, and a world-renowned model railroad display. Carnegie Science Center is located at One Allegheny Avenue on Pittsburgh's North Shore next to Heinz Field. Visit [www.CarnegieScienceCenter.org](http://www.CarnegieScienceCenter.org) or call 412.237.3400 for more information.

### **About Carnegie Mellon**

Carnegie Mellon is a private research university with a distinctive mix of programs in engineering, computer science, robotics, business, public policy, fine arts and the humanities. More than 10,000 undergraduate and graduate students receive an education characterized by its focus on creating and implementing solutions for real problems, interdisciplinary collaboration and innovation. A small student-to-faculty ratio provides an opportunity for close interaction between students and professors. While technology is pervasive on its 144-acre campus, Carnegie Mellon is also distinctive among leading research universities for the world-renowned programs in its College of Fine Arts. For more, see [www.cmu.edu](http://www.cmu.edu).

### **About Robot Hall of Fame**

The Robot Hall of Fame<sup>®</sup> was created in 2003 by Carnegie Mellon University's School of Computer Science to recognize and honor the real and fictional robots that have inspired imaginations and achieved technical excellence. For more, see [www.robotalloffame.org](http://www.robotalloffame.org).

### **About Carnegie Museums of Pittsburgh**

Founded by Andrew Carnegie in 1895, Carnegie Museums of Pittsburgh is a collection of four distinctive museums dedicated to exploration through art and science: Carnegie Museum of Art, Carnegie Museum of Natural History, Carnegie Science Center, and The Andy Warhol Museum. In 2008, the museums reached more than one million people through exhibitions, educational programs, outreach activities, and special events.



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## ***roboworld***<sup>™</sup> **Quick Facts**

**WHAT:** The world's largest permanent and most comprehensive robotics exhibition, ***roboworld***<sup>™</sup> will explore how robotics technology has changed our daily lives, present the next wave of robotics breakthroughs, inspire the next generation of roboticists and researchers, and commemorate the robots and roboticists that have inspired and created current and future technology.

**WHERE:** Carnegie Science Center, One Allegheny Avenue, Pittsburgh, PA, 15212

**WHEN:** ***roboworld***<sup>™</sup> opens to the public Saturday, June 13, 2009

**EXHIBITION ORGNIZATION:** ***roboworld***<sup>™</sup> will feature nearly 30 hands-on, interactive exhibit stations focusing on the robotic themes of sensing, thinking, and acting. The three themes within the exhibition will highlight technological achievements, as well as current and developing technology. In addition to the interactive exhibits, ***roboworld***<sup>™</sup> also will feature a Robot Workshop and serve as the permanent home to *The Robot Hall of Fame*<sup>®</sup>, powered by Carnegie Mellon.

- “Sensing” — Features technologies that demonstrate the innovative ways robots collect data about the world, including machines with vision, motion detection, and ultrasonic mapping abilities.
- “Thinking” — Explores how robots are programmed to process information and act accordingly, including the many facets of robot intelligence, from basic programming to advanced artificial intelligence systems that simulate human thought and emotions.
- “Acting” — Demonstrates how robots walk, roll, climb, fly, grasp and use tools, collect materials, and build structures.
- Robot Workshop — Provides companies and roboticists the opportunity to test their latest innovations and for Science Center visitors the opportunity to experience the latest in robotics technology and interact with scientists working in the field. This space will also serve as an area for visitors to create and test their own robots.
- *The Robot Hall of Fame*<sup>®</sup> powered by Carnegie Mellon — Recognizes excellence in robotics technology worldwide and honors the fictional and real robots that have inspired and made breakthrough accomplishments in robotics.

**GALLERY SIZE:** 6,000 square feet on Carnegie Science Center's second floor

**BUDGET:** \$3.5 million

**WEBSITE:** [www.CarnegieScienceCenter.org](http://www.CarnegieScienceCenter.org)



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## ***roboworld*<sup>™</sup>** **Exhibit List**

*roboworld*<sup>™</sup> features dozens of hands-on, interactive exhibit stations focusing on the themes of robotic sensing, thinking, and acting. The exhibition highlights technological achievements, as well as current and developing technology. In addition to exhibits on the three central robotic themes, *roboworld*<sup>™</sup> features a Robot Workshop and serves as the permanent home of the *Robot Hall of Fame*<sup>®</sup>, powered by Carnegie Mellon.

### **Exhibits**

#### **Andy, the RoboThespian<sup>™</sup> Greeter Robot**

This interactive animatronic robot introduces visitors to the concepts of robotic sensing, thinking, and acting, and is the first robot visitors encounter in *roboworld*<sup>™</sup>. In addition to introducing these themes through pre-programmed actions, visitors will be able to control and interact with the robot via an attached touch screen kiosk. Carnegie Science Center selected the name Andy for the robot after more than 3,000 Pittsburghers and robot fanatics around the world voted in an online poll. Andy is a modified RoboThespian<sup>™</sup>, designed and built by Engineered Arts Limited of Cornwall, England.

#### **StarKick Foosbot**

Visitors to *roboworld*<sup>™</sup> have the opportunity to challenge this unique robot for the title of Foosball Champion. Originally developed in 2001 by the University of Freiburg in Germany, the KiRo Table Soccer Robot sees the playing field via a camera and, depending on the current game situation, controls the foosball game rods. The StarKick Foosbot was further developed by the University of Freiburg in partnership with the Espelkamp Gauselmann Group of Germany. The StarKick Foosbot is an example of the marriage of sensing, thinking, and acting with insights into sensor interpretation, autonomous systems, and machine learning. This robot is on loan to Carnegie Science Center for five years from Gauselmann.

#### **AARON the Cybernetic Artist**

Developed by artist and researcher Harold Cohen of San Diego, AARON the Cybernetic Artist is an ongoing research effort in autonomous machine intelligence. Following a set of rules programmed by Cohen, an internationally recognized artist, AARON creates unique pieces of art each day with the progress displayed on a large screen within *roboworld*<sup>™</sup>, raising the question of whether a robot can exhibit creativity.

#### **ROBOT-Rx<sup>®</sup>**

Developed by McKesson, the ROBOT-Rx<sup>®</sup> is the latest technology used by hospital pharmacies to ensure the safe storage, dispensing, and accounting of thousands of doses of medication. Using an automated bar code system, the robot matches individual patients with prescribed medication, performing the task with 99.9% accuracy. In *roboworld*<sup>™</sup>, visitors will select a patient, scan the identification card into the ROBOT-Rx<sup>®</sup>, and after the robot has selected the prescribed medication, confirm that the medication matches the identification card.

#### **Robot Obstacle Course**

Featuring Cye compact personal robots manufactured by Pittsburgh-based Educational Robot Company, the Robot Obstacle Course challenges these small robots to sense changes in their surroundings and adjust to an unknown area accordingly, using a mathematical grid and algorithm to navigate between

obstacles and goals. Cye is a computer peripheral robot combining obstacle detection and avoidance, path planning, and artificial intelligence. Visitors to *roboworld*<sup>™</sup> will witness the mathematical algorithm used by these robots to process their environment and change their course only seconds after changes in their programmed path.

### **Sketch Robot**

Featuring an ELAU Delta 3 Robot P3 and Pittsburgh-based Integrated Industrial Technologies (I2T) software, the Sketch Robot recreates an image created by visitors in a matter of several minutes using 1,600 marbles, highlighting the speed and accuracy possessed by existing robots.

### **Hoops**

Previously used for welding automobiles before being repurposed by Carnegie Science Center, this robotic basketball-shooting arm has been fascinating Science Center visitors for years. This robot shoots free-throws with 98% accuracy, and as a new addition, visitors will be able to shoot baskets in competition with the robot, with a scoreboard tracking the human and robot scores over the course of a day, demonstrating the repeatability and precision possessed by robots.

### **Robot Hall of Fame<sup>®</sup>, powered by Carnegie Mellon**

Established in 2003 by Carnegie Mellon University's School of Computer Science, the *Robot Hall of Fame*<sup>®</sup> recognizes excellence in robotics technology worldwide and honors the fictional and real robots that have inspired and made breakthrough accomplishments in robotics. (***For more info, see Robot Hall of Fame<sup>®</sup> Fact Sheet.***)

### **Robot Ethics Kiosk**

This touch-screen video kiosk raises questions about robots that visitors may not have previously considered, including "At what point does artificial intelligence blend with human intelligence?;" "To what extent should robots be used in military campaigns?;" and "Should robots care for the elderly?" Visitor responses will be statistically recorded and displayed. The ethics quiz will also be available on the *roboworld*<sup>™</sup> website.

### **Robot Workshop**

This dedicated area within *roboworld*<sup>™</sup> provides companies, educational institutions, and roboticists the opportunity to test their latest innovations with the public. In turn, Science Center visitors will have the opportunity to experience the latest in robotics technology and interact with scientists working in the field. This space will also serve as an area for visitors to create and test their own robots.

### **Terrain Navigation**

Engineers are challenged with determining how robots travel across a wide variety of terrain, whether by complex legs or wheels. Visitors have the opportunity to explore various types of wheel configurations to determine how a robot, simulated by a simple wind-up car, will travel across varied terrain. In addition to configuring the wheels of the car, visitors will explore through video how robots have taken on the shapes of snakes, lizards, insects, fish, and even dogs in order to serve a required function.

### **Sensor Stations**

Featuring a variety of sensors used by robots to measure and gauge their environment, these hands-on stations allow visitors to experience their environment in a manner similar to the way a robot would experience the gallery. Sensors utilized within the exhibit station include:

- LIDAR (Light Detection and Ranging)
- 3D Vision
- Accelerometers
- Thermal Imaging
- Object Tracking

- Distance Sensing
- Color Sensing
- Force Sensing
- Radial Encoder

### **Pong**

Developed by IBM, Pong demonstrates how robots can be used to gauge and evaluate human interest in products or product messaging in a store environment. Using a vision system that can track visitor movement and software capable of interpreting visual focus and recognition of facial gestures, Pong combines the technology of robotics with real-world marketing and sales efforts as an analysis tool.

### **Hazard Bots**

A primary driver in the development of robotics has been the creation of a means to explore and work in environments hostile to human participation. This exhibit explores these environments and robots through video, and features a Solo robot developed by Pittsburgh's RedZone Robotics. The Solo robot is designed to travel through and inspect medium-size water and sewer pipes, searching for any signs of damage or wear by using a variety of sensors.

### **Service Bots**

The presence of robots in hospitals and nursing homes has increased in recent years and will continue to increase as robotics technology improves. This exhibit explores how robots are being used in everyday life to assist humans in completing tasks. In hospitals, TUG™, Aethon's Automated Robotic Delivery System, is transporting bulk materials, medications, and meals between ancillary, support, and patient care units. Following pre-programmed routes, this unescorted vehicle system uses a navigation system that does not require embedded tracks or path routes. Using a collection of sensors, TUG™ avoids obstacles and continues on its task. In *roboworld*™, the TUG™ Zone adjacent to the Service Bots exhibit will allow visitors to program a route for a TUG™ robot, as well as present obstacles for it to navigate.

### **Robot Family Tree**

Part of the *Robot Hall of Fame*®, the Robot Family Tree uses I-Wall technology to allow visitors to explore the history of robotics, from the first use of the word "robot" in the Czech play *Rossum's Universal Robots* to NASA's Mars Rovers and modern science fiction robots. Using a timeline and video monitor on tracks, visitors will access information and video about important robots and robotics breakthroughs as they move the screen along the timeline.

### **Holopix station**

What's a visit to *roboworld*™ without a picture with your favorite robots? Developed by Carnegie Mellon University's Entertainment Technology Center, the Holopix station allows visitors to interact with two of their favorite science fiction robots, R2-D2 and C-3PO from "Star Wars," have their photo captured with members of the *Robot Hall of Fame*®, and receive the image via email.

### **Binary Art**

Computers communicate using a simple binary language using a series of ones and zeros arranged in a universally-accepted code. *roboworld*™ will feature a series of screens displaying flashing binary stating the Three Law of Robotics as created by science fiction author Isaac Asimov. In the futuristic world created by Asimov, all robots are governed by these three laws:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey orders given to it by human beings, except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

### **Lunar Rover Art Installation**

Robotics has influenced every aspect of modern life, including art. This robot hanging above the gallery uses cameras and facial-recognition software to create shadow puppets displayed on a moon-like terrain

on the opposite side of the *roboworld*<sup>™</sup> gallery. The Lunar Rover Art Installation is designed by Pittsburgh artist and roboticist Ian Ingram.

**Additional exhibits and experiences will be announced prior to the exhibition opening on June 13, 2009.**



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### **Robot Hall of Fame<sup>®</sup>** **Fact Sheet**

Established in 2003 by Carnegie Mellon University's School of Computer Science, the *Robot Hall of Fame<sup>®</sup>* recognizes excellence in robotics technology worldwide and honors the fictional and real robots that have inspired and made breakthrough accomplishments in robotics.

A jury of scholars, researchers, writers, designers, and entrepreneurs select the real and fictional robots that will be honored by the Hall of Fame. When *roboworld<sup>™</sup>* opens June 13, 2009, the Hall of Fame will have a permanent physical home for current and future inductees. Prior to the opening of *roboworld<sup>™</sup>*, the Hall of Fame existed only through the Hall's website.

The *Robot Hall of Fame<sup>®</sup>* exhibit within *roboworld<sup>™</sup>* will be updated as new inductees are selected.

In addition to full-scale, museum-quality replicas of several of the science fiction inductees and nominees, the Hall of Fame will include a Robot Family Tree exhibited through the use of an innovative i-Wall display, tracing the development of yesterday's science fiction and early robots into today's working robots and tomorrow's research.

#### **Robot Hall of Fame<sup>™</sup> Inductees**

- 2009 Inductees
  - NASA Mars Rovers Spirit and Opportunity
  - iRobot Roomba
  - DaVinci Medical Robot System
  - \*Huey, Dewey, and Louie, from the 1971 film "Silent Running"
  - T-800 Terminator, from the 1984 film "The Terminator"
- 2008 Inductees
  - Raibert Hopper
  - NavLab 5
  - LEGO<sup>®</sup> Mindstorms
  - Lt. Cmdr. Data from the television show "Star Trek: The Next Generation"
- 2006 Inductees
  - Sony's AIBO
  - SCARA robot arm
  - David, from the 2001 Steven Spielberg film "Artificial Intelligence: AI"
  - \*Maria, from the 1920 German film "Metropolis"
  - \*Gort, from the 1951 film "The Day the Earth Stood Still"
- 2004 Inductees
  - Honda's ASIMO humanoid robot
  - Stanford Research Institute's Shakey
  - Astro Boy, from the comic book and cartoon of the same name
  - \*Robby, the Robot from the 1956 MGM film "Forbidden Planet"
  - \*C-3PO from "Star Wars"
- 2003 Inductees
  - \*HAL 9000 from Arthur C. Clarke's "2001: A Space Odyssey"

- NASA's Mars Pathfinder Sojourner Rover
- \*R2D2 from "Star Wars"
- Unimate manufacturing arm

Currently, more information on each of the inductees, the jury, and the nomination process can be found online at [www.RobotHallofFame.org](http://www.RobotHallofFame.org).

\* full-scale, museum-quality replica is present is *roboworld*™



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***roboworld***<sup>™</sup>  
**Advisory Committee**

**Benno Bernt**, Chairman and General Partner  
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**Winston Erevelles**, Dean, School of Engineering, Mathematics, and Science  
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Carnegie Mellon University

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A



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**roboworld™**  
**Partners**

**Roto Studio**  
Columbus, Ohio

**Educational Robot Company**  
Pittsburgh, Pa.

**Engineered Arts Limited**  
Cornwall, UK

**Lynch Exhibits**  
Burlington Township, NJ

**Carnegie Mellon University**  
Entertainment Technology Center  
Pittsburgh, Pa.

**Carnegie Mellon University**  
The Robotics Institute  
Pittsburgh, Pa.

**Carnegie Mellon University**  
Quality of Life Technology Center  
Pittsburgh, Pa.

**IBM**  
Rochester, NY

**Fred Barton Productions**  
Beverly Hills, Ca.

**California University of Pennsylvania**  
California, Pa.

**University of Pittsburgh**  
Quality of Life Technology Center  
Pittsburgh, Pa.

**Integrated Industrial Technologies**  
Pittsburgh, Pa.

**Nuvation**  
San Jose, Cal.

**Robert Morris University**  
Moon Township, Pa.

**McKesson Automation**  
Cranberry, Pa.

**Aethon**  
Robinson, Pa.

**RedZone Robotics**  
Pittsburgh, Pa.

**Sony**  
Pittsburgh, Pa.

**Gauselmann AG**  
Germany

**Harold Cohen**  
San Diego, Ca.

**Ian Ingram**  
Pittsburgh, Pa.



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## Pittsburgh is “Roboburgh”

For the past decade Pittsburgh, also known by the moniker “Roboburgh,” has been identified as one of only a handful of locations leading the country in developing cutting-edge robotics technology. From the establishment of The Robotics Institute at Carnegie Mellon University in 1979, to the formation of The Robotics Corridor educational initiative, to the opening of the world-class **roboworld**<sup>™</sup> exhibition at Carnegie Science Center in June 2009, Pittsburgh has been at the forefront of robotics education, development, and public interaction.

Pittsburgh is uniquely positioned to be a world leader in the development of robotics-oriented industries thanks to its history of industrial and entrepreneurial leadership, wealth of technology-focused businesses, and the numerous institutions of higher education, each with a keen and specific interest in the development of the next generation of robotics technology and the workforce capable of creating and supporting the growth of the robotics industry nationally.

More than 60 robotics companies currently reside in Allegheny County, many the product of the strong robotics, engineering, and technology programs at Carnegie Mellon University and the University of Pittsburgh. These institutions of higher education have partnered with other colleges and universities in the greater Pittsburgh region to form The Robotics Corridor, a joint degree program to develop the workforce that will be needed to expand and support the estimated \$500 billion emerging robotics industry in southwestern Pennsylvania.

Carnegie Science Center’s **roboworld**<sup>™</sup> exhibition will provide the spark that ignites the interest of today’s youth in careers in science, technology, engineering, and robotics.

For more than 20 years, the Science Center (and its predecessor organization, Buhl Science Center) has been a leader in developing robotics-oriented exhibitions and educational programming. **roboworld**<sup>™</sup> is the next generation of robotics exhibitions and will capture the imaginations of hundreds of thousands of visitors every year, sparking interest in robotics and leading to the next generation of robotics researchers and technicians.



**CARNEGIE SCIENCE CENTER**

*One of the four Carnegie Museums of Pittsburgh*

## *roboworld*<sup>™</sup> Robot Dance Contest

Carnegie Science Center has brought together some of the most respected names in dance in Pittsburgh to judge help choose the “Best Bot in the ‘Burgh.”

Starting April 21, participants can submit videos of themselves dancing like a robot on the Science Center’s website in order to enter-to-win tickets to the *roboworld*<sup>™</sup> Preview on Sunday, June 7, presented by PNC, and for one lucky contestant, a \$500 cash prize. The contest closes on Tuesday, May 26, with winners announced on Friday, May 29, on the Science Center website.

Videos must be less than one minute in length, and at the end of each submission, the dancer must look into the camera and state “I’m going to *roboworld*<sup>™</sup> at Carnegie Science Center.” Visitors to the Science Center’s YouTube channel can vote for their favorite dancer for the “People’s Choice” award, the winner of which receives two tickets to the *roboworld*<sup>™</sup> preview, an overnight stay at the Sheraton Station Square, and a *roboworld*<sup>™</sup> prize pack.

On May 27, the panel of judges will select the “Best Bot in the ‘Burgh,” who will receive two tickets to the *roboworld*<sup>™</sup> preview, an overnight stay at the Sheraton Station Square, a roboworld prize pack, and \$500 cash.

For complete rules and details, visit [www.CarnegieScienceCenter.org](http://www.CarnegieScienceCenter.org).

### *roboworld*<sup>™</sup> Robot Dance Contest Judges

**Harris N. Ferris**, Executive Director  
Pittsburgh Ballet Theater

**Dr. Rebecca Hess**, Associate Professor, Health Science and Sport Studies  
California University of Pennsylvania

**Beth Corning**, Artistic Executive Director  
Dance Alloy Theater

**Rene Polanco**, Coordinator, Dance Department  
Pittsburgh CAPA High School

**Stephen Cropper**, Chief Meteorologist  
WTAE-TV

**Ron Baillie**, Co-Director  
Carnegie Science Center

**Ann Metzger**, Co-Director  
Carnegie Science Center