



LOOKING BACK TO MOVE FORWARD /

A RE:COLLECTION OF ROBOTICS AT CARNEGIE MELLON

WINTER 2022

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Hunt Library Gallery
January 19, 2022 – March 18, 2022

The University Libraries is pleased to present *Looking Back to Move Forward / A Re:collection of Robotics at Carnegie Mellon*. The debut exhibition in the new first-floor gallery of Hunt Library provides a window into the ongoing work of The Robotics Project, an interdisciplinary approach to preserving the legacy of robotics through a partnership between the University Libraries and the School of Computer Science. Featuring more than 40 robots, archival artifacts, personal recollections from the people who made it all happen and a look inside the process of archiving robots, this exhibition engages the ongoing interplay between the past and the future in robotics research.

Curators: Katherine Barbera & Kathleen Donahoe
Art Director: Heidi Wren Bartlett
Project Manager: Morgan Walbert

CAPTION FOR COVER
Photograph of Marc Donner operating the *Trojan Cockroach* during field testing, c. 1983. Courtesy of the Carnegie Mellon University Archives.

Keith G. Webster
Helen and Henry Posner, Jr. Dean of the University Libraries
Director of Emerging and Integrative Media Initiatives

library.cmu.edu



Looking Back to Move Forward / A Re:collection of Robotics at Carnegie Mellon presents a selection of compelling artifacts and archival material from the history of robotics at CMU. The story begins in the early 1980s with *Terregator*, a first-of-its-kind outdoor autonomous vehicle, and comes to explore past projects from a variety of research areas that the University is known for—field robotics, artificial intelligence, human-robot interaction, and more. The exhibition invites viewers to revisit material moments from this history and read personal recollections from original project team members, while at the same time considering the University's growing collection of retired robot artifacts.

Robotics has been part of Carnegie Mellon University for more than four decades. Founded in 1979 with seed funding from Westinghouse Electric Corporation, the Robotics Institute emerged at CMU as the very first robotics department at a U.S. university. Any history of CMU, the Pittsburgh technology ecosystem, or the field of robotics would be incomplete without recognition of the research at Carnegie Mellon and its broader impact.

Recognizing the influence and responsibility of this legacy, the University created The Robotics Project in 2019 as an interdisciplinary approach to preserving the record of robotics through a partnership between the University Libraries and the School of Computer Science. The Robotics Project team is building an archive to house this legacy and contribute to a broader understanding of the technology as well as the development and evolution of the community of people who make it possible.

Robotics embodies a commitment to the future, yet as the field evolves over time and nears half a century in the university environment, its legacy endures and grows through the stories, recollections, connections, and material evidence of its past.

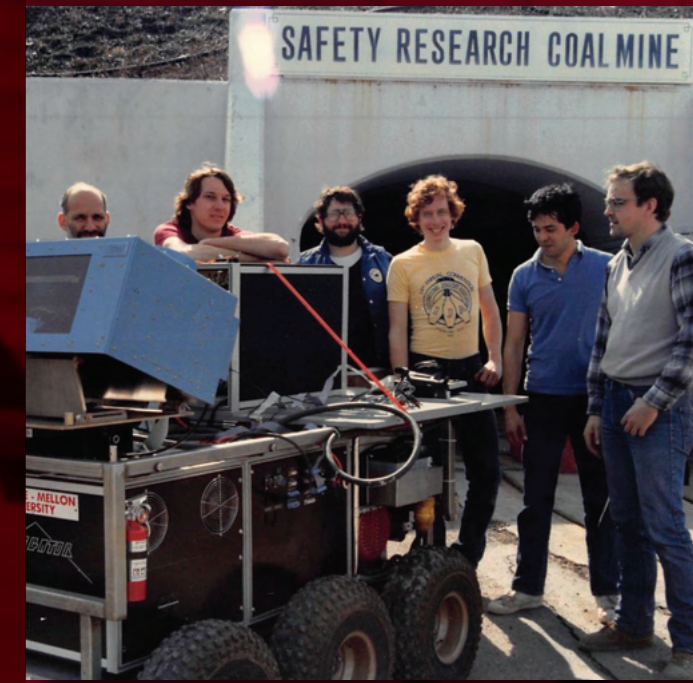
Learn more about The Robotics Project and the Robot Archive by visiting the digital companion to this exhibition:

exhibits.library.cmu.edu/roboticsproject

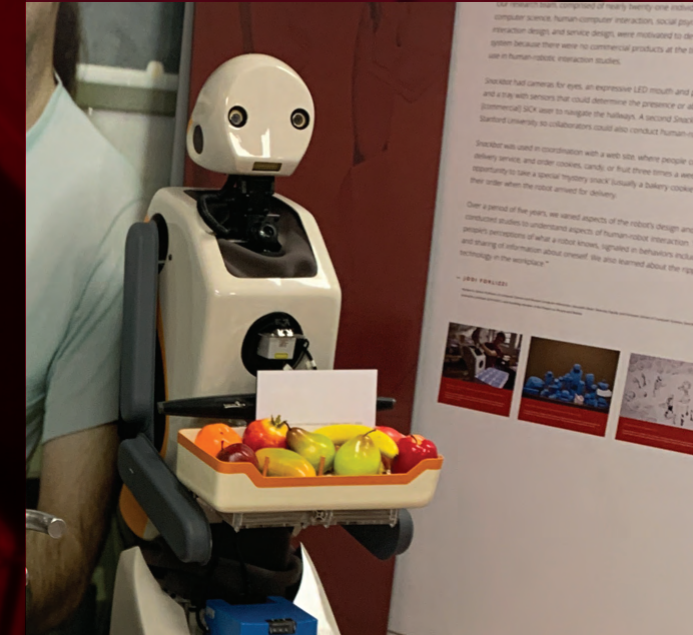


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TERREGATOR TERREGATOR TERREGATOR / SNACKBOT SNACKBOT SNACKBOT / SOFT ROBOTICS SOFT ROBOTICS / SOCCER ROBOTS SOCCER ROBOTS / CMU /



In the early 1980s, a team including Takeo Kanade and William "Red" L. Whittaker began working on a terrestrial navigator capable of negotiating outdoor, off-road terrain. *Terregator*, as it would become known, was the first of its kind and the first autonomous vehicle at Carnegie Mellon. This six-wheeled machine equipped with the latest technology of the time—video cameras, sonar ring, and a scanning laser range finder—served as a small-scale but reliable testbed for the university's earliest research in outdoor autonomy, deploying in a variety of settings, from Schenley Park to coal mines.



Instead of heading to a vending machine for a snack, what if a robot brought one to you? That was the concept behind *Snackbot*, a mobile robot designed to reinforce long-term positive relationships between humans and robots. Led by Jodi Forlizzi in the Human-Computer Interaction Institute and a team of more than 20 interdisciplinary researchers from multiple institutions, *Snackbot* was created in 2009 as a way of studying human interaction and testing the design process. It delivered granola bars, cookies, and other treats to offices throughout Newell-Simon Hall.



In the early 2010s, Siddharth Sanan, a postdoctoral researcher studying under Christopher Atkeson in the Robotics Institute, developed a soft robot prototype to assist the elderly and people with disabilities. The project demonstrated that a lightweight robot lacking a proper "skeleton" could still assist humans with tasks like wiping something with a washcloth. Donald Hall, a film director at Walt Disney Animation Studios, saw the soft robot arm while visiting the Robotics Institute on a research trip in the 2010s. He liked the idea of a huggable robot that could comfort humans and was inspired to create Baymax, the inflatable, friendly robot. Baymax premiered as a main character in the animated movie *Big Hero 6* in 2014.



In 1997, a team of Carnegie Mellon students led by Manuela Veloso won the inaugural Robot Soccer World Cup championship. A first-of-its-kind event, RoboCup has since become an international phenomenon. Veloso and her students have used soccer robots to study multi-robot planning and execution in a complex and uncertain environment—the soccer field.

IMAGE CAPTIONS

Terregator and members of the project team including Kevin Dowling, Martial Hebert, Chuck Whittaker, and Mike Blackwell in front of the entrance to the Safety Research Coal Mine, c. 1985. Courtesy of Kevin Dowling, CEO of Kaarta.

Snackbot in the Looking Back to Move Forward University Libraries exhibit, 2021.

Soft robot arm developed by Siddharth Sanan while studying under Christopher G. Atkeson at Carnegie Mellon. Courtesy of the Carnegie Mellon University Archives.

Photograph of a robot soccer practice with Manuela Veloso and her students, 2003. Courtesy of the Carnegie Mellon University Archives.



Photograph of *Terregator* during outdoor field testing, c. 1984.
Courtesy of the Robotics Institute at Carnegie Mellon University.