Commercial Robot Puppets
Robotic puppets on vehicles

- Jeep/fire engine $5,000
Motorcycle
$4,500

Wheel Chair
$5,000

Tricycle
$4,000
"You can remotely make these things drive, and talk, or even sing to music that is remotely activated!

All you have to do is steer them. In fact, the mouth moves with your words by voice activation, or can lip sync by itself to a tape; just talk into the microphone or press play!

Not to mention, some of them come equipped with sirens and lights that are also remote controlled.

It looks like the robot is doing it all by itself with no wires or speakers visible; and the way it is made, it even looks like he is pedaling or steering or driving!

The wheelchair can do wheelies!

You can remotely carry on conversations with kids who talk to this puppet/robot, and any Innova™ puppet head can be put on!
Custom heads available!

- Tricycle Motorcycle
- Wheelchair
- Jeep Firetruck

- 48" tall
- 35lbs
- Welded steel tricycle frame 50" tall
- Rubber tires-police motorcycle
- Remotely controlled strobe lights/ siren/headlights
- Remotely controlled wheelchair
- Removable robot
- Joystick motion
- Remotely controlled strobe lights/ siren/headlights
- Modular name brand components
- Robot and Transmitter come with rechargeable batteries
- Arms steer handlebars left and right
• **Body moves** forward and back
• Includes cassette player/recorder
• **Head** can be rotated independently left and right
• Variable speed control for forward and reverse motion
• **High power amplifier** for quality voice and tape audio
• All mechanical components and sound systems are hidden from view.
• **Heads** are easily interchangeable.
• Clothing can be changed easily. (wears size 6 child's clothing)
• **Mouth** moves in synch with voice or with tape for realistic motion

• **Used by:** * Walt Disney World - Epcot Center * Universal Studios * IBM * Kraft * Sony * General Motors - Buick * Toshiba America * TWA * Proctor & Gamble * Siemens * AT&T * GTE * Delta Airlines * US Border Patrol * Hong Kong Royal Police * and over 100 US Law enforcement agencies

• **Please call for details.** 1-800-854-2151
Puppetumes™ are a high tech puppet/costume hybrid. The mouth moves by radio-control.

A person wears the Puppetume™ on their head, and a separate operator runs the remote control.

All our puppetumes come with a fan-cooled head, wireless remote control, and matching gloves.

You supply the clothing.

12 AA batteries are required, and not included, for operation.

What better way to make an impact than to walk out on stage with one of these!
Innova Style
$649.00 ea

- Mrs. Pitz
- Felicia
- Major Buzz
- Mr. Wanco
$499.00

Ralph (orange head)

• Elmer (blue head)
Regular Style
$399.00ea

Heads for easy exchange
Remote Controlled Dalmatian
$799.00
(+ $40.00 shipping and handling)

- Move the character's mouth by means of radio control from up to hundreds of yards away.
- Comes with radio controlled, fan-cooled head and matching gloves, prerecorded audio tape with seven fire safety songs and instrumental tracks with fire prevention lessons.

Dalmatian Character Costume
860566011 $650.00
(+ $40.00 shipping and handling)
Comes with fan cooled head and matching gloves.
Robot Theater Accessories
The Performance Animation Controller (PAC).

The PAC is the umbilical cord between the performer and the animatronic character.
The Performance Animation Controller (PAC).

- The PAC is the umbilical cord between the performer and the animatronic character.

- Ergonomically designed input devices, convey signals from the fingers, hands and wrists which are arranged by the PAC into a delicately orchestrated group of electronic commands.
  
  - These signals instruct the motors that provide the movement and expressions of the animatronic character.
  
  - This ballet of movement happens in real time, responding immediately to new direction.

- The PAC has many performance options and can record and playback the exact action of a previous rehearsal or take.
  
  - Sections of a recording can be re-recorded or played live.
  
  - A further feature of the PAC allows the performance of computer graphic images.
The Performance Animation Controller (PAC).

- Adding a PAC editor to the system allows the performer to revisit the movements of any one motor and through a graphical interface re-adjust its position throughout the entire recorded performance.
  - Lip synchronisation and all other movement can be tuned to perfection using the PAC editor.
- The PAC represents the most advanced and versatile form of animatronic manipulation and performance available to film makers today.
palm pilot robot kit
palm pilot robot kit (PPRK)

- We need inexpensive and fun robots.
- What if you could build a robot that could be strapped to a Palm Pilot, or a GameBoy or TI Calculator?
- CMU created one such robot, using exclusively off-the-shelf parts.
- The novice roboteer can build their pprk in about two hours after acquiring about $120 in parts.
palm pilot robot kit

- They have a website where you can find the bill of materials and step by step pictures and instructions for building your own pprk.

- The site also provides software and a few simple demo programs for your enjoyment.
Literature and WWW Links
This list attempts to provide a broad survey of the literature in the area of believable agents, ranging from the animation issues to models of emotion and cognition. It is by no means a complete list, and many if not most of these authors have more work available on the subject. However, we felt that it is representative of much current work and a good starting point for reading.

– Comments and suggestions are most welcome at pdoyle@cs.stanford.edu.


– R. Huard, and B. Hayes-Roth. "Character mastery with improvisational puppets," in Notes of the IJCAI ’97 Workshop on Animated Interface Agents, Nagoya, Japan, Aug. 1997, pp. 85-90. Experimental study of children’s play with three kinds of toys: commercial art software, traditional puppets, and improvisational puppets that have animate minds and animated bodies. Results show that children enjoy all three kinds of toys, but only play with improvisational improves their master of characters and their performance on associated measures of social understanding, story comprehension, and storycrafting.

– K. Isbister. "Personality in Interactive Computer Characters: The Importance of Consistency," unpublished manuscript. Reports evidence that people prefer consistent personality traits to inconsistent personality traits, even when the consistent value is not preferred. Consistency refers to similarity of passive/dominant mode in verbal and physical behaviors. See also: Isbister and Hayes-Roth, 1998.


– E. Jones, Interpersonal Perception. W. H. Freeman & Co.: New York, 1990. Discusses the psychological effects of social interaction, with particular emphasis on how humans influence and are influenced by perceptions of others; significance of context in social perception; "expectancy effects" in interactions. See also: Dyer, 1993; Fiske and Taylor, 1991; James, 1900.


– Y. Moon, "Can computer personalities be human personalities?" in Int. Journal of Human-Computer Studies, vol. 43, pp. 223-239, 1995. Summarizes evidence that people prefer individuals with personality attributes similar to their own. Includes review of studies of a range of relationships, e.g. marital satisfaction, roommate relationships, interest in strangers.


– A. Newell. Unified Theories of Cognition. Harvard University Press: Cambridge, MA, 1990. Newell puts forth the proposition that the field of AI should focus on building integrated intelligent agents. He illustrates the goal and process with a detailed report of his own group’s work on the Soar architecture.


J. Rickel and W. L. Johnson, "Integrating Pedagogical Capabilities in a Virtual Environment Agent," in Proc. 1st Int. Conf. on Autonomous Agents, Marina del Rey, CA, Feb. 1997, pp. 30-38. Describes Steve, an animated, autonomous agent that demonstrates procedural skills in a graphical environment. Agent may appear in several forms depending on design needs. Uses the Jack character architecture. See also: Badler 1997; Elliott et al., 1997; Perlin, 1996.


Walt Disney Productions, Snow White, (film), 1937. The world's first full-length animated film. Early example of then-new Disney animation principles used to make cartoon characters with depth and life. A classic. See also: Lasseter 1987.


• pdoyle@cs.stanford.edu April 22, 1998
Oz Project Publications

- The following publications are available from their respective publishers. If a CMU technical report number is shown (CMU-CS-xxx), the report may be ordered for a small fee by contacting:
  - Computer Science Documentation phone: 412-268-2596
  - School of Computer Science fax: 412-681-5739
  - Carnegie Mellon University e-mail: reports@cs.cmu.edu
  - 5000 Forbes Avenue
  - Pittsburgh, PA 15213-3891

- **IMPORTANT:** Read the [copyright notice](#) before proceeding.

- **Overview Papers**

  - *An Oz-Centric Review of Interactive Drama and Believable Agents*
    ([html version](#) (preferred version), [postscript version](#) (for printing))

  - *The Nature of Character in Interactive Worlds and The Oz Project*
    ([postscript version](#), [gzipped version](#))
Virtual Reality, Art, and Entertainment
(postscript version, gzipped version)

Interactive Characters and Agents

Believable Agents: Building Interactive Personalities
(postscript version, pdf version)

Personality-Rich Believable Agents That Use Language
(postscript version, gzipped version)

Believable Social and Emotional Agents

This thesis is available in formats that have been optimized for printing in one-sided and two-sided/book format.

- Two-sided (postscript version [1.3MB], gzipped postscript version [364K])
- One-sided (postscript version [1.3MB], gzipped postscript version [359K])
• **Natural Negotiation for Believable Agents**  
  (postscript version, gzipped version)

• **The Role of Emotion in Believable Agents**  
  (postscript version, gzipped version)

• **Real-time Control of Animated Broad Agents**  
  (postscript version, gzipped version)
**Broad Agents**
(postscript version, gzipped version)

- **Integrating Reactivity, Goals, and Emotion in a Broad Agent**
  (postscript version, gzipped version)
Broad Agents
(postscript version, gzipped version)

- Integrating Reactivity, Goals, and Emotion in a Broad Agent
  (postscript version, gzipped version)

- An Architecture for Action, Emotion, and Social Behavior
  Tech report version (postscript version, gzipped version)
  Book version (postscript version, gzipped version)

- Building Emotional Agents
  (postscript version, gzipped version)
Presentation and Language Generation

- *Integrated Natural Language Generation Systems*

- *Natural Language Text Generation in the Oz Interactive Fiction Project*

- *Towards a Theory of Narrative for Interactive Fiction*
Interactive Drama

- **Dramatic Presence**

- **Applications**
  - *Developing Interactive Fiction for the Language Classroom*
• **Patents**
  – [Improv Patent](#)

• **Publications**

• **Responsive Actors in Shared Virtual Worlds**
  – K. Perlin

• **Improvisational Animation**
  – K. Perlin, A. Goldberg
  – *1999 International Conference on Virtual Worlds and Simulation, San Francisco.*

• **Texturing and Modeling; A Procedural Approach, Second Edition**
  – Ebert D. et al
  – *AP Professional; Cambridge, 1998*
  – Chapter entitled: "Noise, Hypertexture, Antialiasing and Gestures"

• **Layered Compositing of Facial Expression**
  – K. Perlin
  – *ACM SIGGRAPH 97 Technical Sketch*

• **Improv: A System for Scripting Interactive Actors in Virtual Worlds**
  – K. Perlin, A. Goldberg
  – *Computer Graphics; Vol. 29 No. 3., 1996*

• **Real Time Responsive Animation with Personality**
  – K. Perlin

• *IEEE Transactions on Visualization and Computer Graphics; Vol 1 No. 1., 1995*
Additional Literature

- Henryk Jurkowski - Aspects of Puppet Theatre, A Puppet Centre Trust Publication, 156 Lavender Hill, London SW 11 5TJ
- Jiwan Pani, World of Other Faces, Indian Masks. Publications Division, Ministry of Information and Broadcasting Government of India 1986
- Marg, A Magazine of the Arts, A Tata Enterprise June 1968 Vol XXI Number 3 The Creator, the Creation and the Sutradhara
- Various types of traditional puppets in India
- Jiwan Pani, Living Dolls, Story of Indian Puppets Publications Division as above
- Gershom Scholem, Kabala I jej symbolika, Znak 1996, Poland
- Zur Kabbala und Ihrer Symbolik Rhein Verlag 1960, Frankfurt am Main.
- Henryk Jurkowski Metamorphoses, La Marionnette au Xxe Siecle, Editions Institut Internationale de la Marionnette, 2000, 7 place Winston Churchill, 08000 Charleville-Mezieres
Additional Literature

- James Fisher Editor The Puppetry Yearbook Volume Four The Edwin Mellen Press, 2000
- J.E. Varey, Historia de Los Titeres en Espana (Desde sus origenes hasta mediados del siglo XVIII), Revista de Occidente, Madrid 1957
- Katarzyna Brzozowska Golem-Kabalistyczna Lalka Prom H. Jurkowski
- Akademia Teatralna im A. Zelwerowicza, Wydz Sztuki Lalkarskiej w Bialymstoku
- Biuletyn Informacyjny Teatr Lalek Nr 1(29) 1990 Polskiego Osrodka Lalkarskiego POLUNIMA