DAVID HANSON

ARTIST, SCIENTIST PH.D.

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Link to portfolio

VISION

Aspiring to the renaissance ideal of the scientist-artist, I seek to understand human mind, purpose, and place in the cosmos, as I craft intelligent humanlike robots in works of both art and science, with research in areas including in cognitive science, A.I., and material science. Ultimately, I seek to help realize kind and wise genius machines, who may collaborate with us to solve the world's hard problems and realize an unimaginably wondrous future.

BIO

David Hanson Ph.D., Bio

Dr. David Hanson creates androids—humanlike robots with intelligence and feelings. Via integrated research in cognitive A.I., bio-inspired mechanics, material science, sculpture and animation, expressive robotic faces and walking robot bodies, Hanson strives to bring robots to life quite literally. The walking, talking robots resulting from Hanson's efforts have been heralded as "genius" by WIRED magazine and PC magazine, and featured in National Geographic, Popular Science, Le Figaro, Science Magazine, and many other venues. A former Walt Disney Imagineer, Hanson received awards from NASA, NSF, AAAI, Tech Titans' Innovator of the Year, and Cooper Hewitt Design Triennial, and several best poster and paper awards. Hanson invented or co-invented numerous technologies, including patented lipid-bilayer nanotech for naturalistic skin, expressive face mechanisms, virtual character tools, and neurocognitive-inspired software systems for machine cognition. He has published over 20 peer-reviewed papers with IEEE, Science, Springer, Cog Sci, AAAI, and SPIE, chapters in 4 books, and coauthored a book with JPL senior scientist Yoseph Bar-Cohen. As an artist in various media, Hanson has exhibited at the Cooper Hewwit, the Tokyo Modern, the Reina Sofia, and many other museums and galleries, as well as sculpting for the Atlantis Resort, Universal Studios Islands of Adventure, and Disney Imagineering for Tokyo Disneyland, Tokyo Disney Sea, and Disneyworld, and received positive art reviews in the New York Times, the L.A. Times, and other sources. Hanson received his Ph.D. from the University of Texas at Dallas in Aesthetic Studies/ Interactive Arts and Engineering, and holds a BFA in film/video/animation from Rhode Island School of Design. In 2003, David Hanson founded Hanson Robotics to pursue character robot research and applications. Since then, Hanson and team introduced numerous noted robots, including the Philip K. Dick Android, the walking Einstein portrait Albert-Hubo (in collaboration with KAIST), Bina48, and the small Zeno RoboKind. These robots serve a wide range of research in cognitive science, autism treatment, and robotics at institutions including JPL, Cambridge University, KAIST, UCSD, and the University of Geneva, U. Pisa, and the Autism Treatment Center in Dallas. By

emulating human bio-systems, from cognition to locomotion to social expression, Hanson seeks to unlock mysteries of human nature and yield machines that are creatively brilliant, truly conscious, and friends with us. Towards this end, in 2009 Hanson founded the nonprofit Apollo Mind Initiative (AMI) dedicated to realizing friendly genius machines by the year 2029. Hanson actively collaborates with many researchers in numerous scientific and arts disciplines, seeking to bridge these into an integrated "superdiscipline", in pursuit of insights into the nature of mind and meaning.

HONORS

AIR FORCE RESEARCH LABS (AFRL) RESEARCH AWARD: "Improving Respirator Testing with Hanson Robotics' Technologies", using Hanson robotic faces to test respirators' protection against pathogenic nano-particulates such as H1N1, anthrax and radioactive materials; awarded April 2011.

ART FUTURA, INVITED ARTIST: TECHNOPOLIS, BUENOS AIRIES. 2011.

CHAIR OF ASME BIOMIMETIC ROBOTICS WORSHOP, 2011

NATIONAL SCIENCE FOUNDATION PANELIST, 2009-2010.

NATIONAL SCIENCE FOUNDATION, PIRE AWARD COMMITTEE MEMBER, 2010.

ASSOCIATE EDITOR, IEEE HUMANOIDS, 2010.

SPEAKER AND EXHIBITOR, TED 2009.

WINNER OF 2009 ITALIAN CENTRO NATIONALE RISERCHE (CNR) SCHOLARSHIP—6 MONTHS COLLABORATING ON ROBOTS IN AUTISM RESEARCH WITH THE UNIVERSITY OF PISA, STELLA MARIS NEUROLOGICAL HOSPITAL AND THE UNIVERSITY OF MESSINA, 2008-2009.

WINNER OF TECHTITAN'S "INNOVATOR OF THE YEAR" AWARD, 2007.

WINNER OF EMERGING TECHNOLOGY AWARD, 2007.

COOPER HEWITT SMITHSONIAN DESIGN TRIENNIAL, 2006. Exhibitor, panelist, and speaker.

INCLUDED IN NUMEROUS "TOP 10 COOLEST ROBOTS" LISTS, INCLUDING: TECHEBLOG, WWW.ODDEE.COM, AND HTTP://MYAMAZINGFACT.BLOGSPOT.COM/2008/09/10-COOLEST-ROBOTS.HTML.

CO-RECIPIENT OF 1ST PLACE AWARD FOR OUTSTANDING CLINICAL POSTER PRESENTATION AT THE 12TH BIENNIAL INTERNATIONAL CONFERENCE ON RECONSTRUCTIVE PREPROSTHETIC SURGERY, WITH DR. KENNETH KENT, "ROBOTIC ANIMATION OF FACIAL PROSTHESES". Presentated by Dr. Kent, 2006.

DARPA WORKSHOPS CONSULTANT, 2005-2007.

COVER WIRED MAGAZINE, JANUARY 2006. Albert Hubo robot ranked the #17 greatest robot of all history, with KAIST Hubo Group, using our Einstein portrait atop the KAIST walking Hubo robot.

KAIST "ALBERT HUBO" greeted world leaders at the APEC summit in Busan Korea, NOVEMBER 2005; also at the Winter Olympics in Turin Italy, February 2006.

PATENT AWARDED: "A Human Emulation Robot System", issued September 2006, (priority dated to June 2002). Two more patents pending.

UTA ARRI INNOVATION AWARD, FEBRUARY 2006.

AAAI AWARD, FIRST PLACE FOR OPEN INTERACTION, for the PKD Android, 2005

NSF STTR AWARD, to investigate piezo-actuated facial expressions with Shashank Priya of ARRI.

WIRED MAGAZINE NEXTFEST, 2005, CHICAGO, JUNE 05. "PKD-A, Philip K Dick android". Also featured exhibitor at Nexfest '04, '06, '07 and '08.

WIRED NEXTFEST, 2006. Exhibitor and panelist, showing Jules the Androgynoid (with UWE), and also with the KAIST Alex Hubo.

FEATURED IN WIRED MAGAZINE, JULY 2004, JUNE '05, JANUARY '06, MARCH '06, AND ONLINE SEPTEMBER '08.

WIRED MAGAZINE, PC MAGAZINE AND POPULAR SCIENCE described Hanson and his work as "genius" in various articles.

WORLD TECHNOLOGY AWARD 2004, NOMINEE & SEMIFINALIST: BEST IT HARDWARE.

NIST ATP AWARD, 2004, my team and I won a "highly meritorious" designation, with funding pending the 2005 congressional spending bill.

CO-CHAIR OF EAP APPLICATIONS SESSION at the SPIE International Smart Materials Conference, in San Diego, March 15-19, 2004.

EXHIBITOR NEXTFEST, WIRED magazine's technology festival, SF, CA, May, 2004.

EXHIBITED AT THE TED, "TECHNOLOGY ENTERTAINMENT DESIGN", Monterey CA, Feb, 2004.

JPL OPEN HOUSE, 2002, 2003, AND 2005. Presenting my robots with the JPL Advanced Actuators Lab.

CO-ORGANIZER AND SPEAKER AT THE 2003 AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS) ANNUAL MEETING in Denver CO, of a symposium entitled "Biologically Inspired Intelligent Robotics". Co-organized with Yoseph Bar-Cohen of JPL/CalTech and Cynthia Breazeal of the MIT AI lab.

SCIENCE MAGAZINE PROFILE, March 28, 2003, described Hanson as "Head of his Class" in sociable robotics.

THEMED ENTERTAINMENT ASSOCIATION, BEST THEMED DISPLAY AWARD 1996, TEAM-SHARED 1ST PLACE for the "World of Disney Themed store", at Walt Disney World, Orlando.

NASA INVENTIONS AND CONTRIBUTIONS SPACE ACT MONETARY AWARD, 1994: TEAM-SHARED 2ND PLACE. NASA prize for best invention of the year, awarded to Dr. Heinrich Gerritsen, Mary Lou Jepson and myself for a novel space shuttle lighting system. Using a custom Fourier transform light-filter, this device output a nearly perfect diffusion of light, useful for science experiments and reducing astronaut eye-fatigue.

CO-INITIATED THE UTD COMPUTER GAMING COMPETITION, organized $25k USD funding from Hughes Ventures, 2006

ORGANIZER AND CHAIR, "MIRACLES AND MONSTROSITIES" 1993 symposium on genetically engineered art, at RISD-Brown art+tech festival PONG.

ODYSSEY OF THE MIND, EDUCATIONAL COMPETITION, 1992: FIRST PLACE WORLD. Co-built a robotic vehicle to navigate an obstacle course, automatically dock to a trailer, gather objects, and deliver them to a designated area.

RHODE ISLAND SCHOOL OF DESIGN (RISD) MERIT AWARD, 1992-1996.

VICE PRESIDENT, RISD STUDENT GOVERNMENT, 1995-1996. Co-managed a budget of $365,000; organized functions, lectures, and various student-driven initiatives (such as INTER ALIA, the Student Art-Science Initiative). Co-organized RISD-Brown art+tech fest PONG.

MEMBER American Association for the Advancement of Science (AAAS) since 2000.

MEMBER American Association for Artificial Intelligence (AAAI), since 2001.

MEMBER SPIE, since 2001.

TALKS

TEDx, TAIPEI. December 17, 2011.

H+, HONG KONG, December 5, 2011.

MENSA, November 25, 2011.

UT DALLAS, INTERACTIVE ARTS, 2011.

WETA WORKSHOPS, WELLINGTON, NZ, 2011

UNIVERSITY OF AUCKLAND, NZ, 2011.

MORGO ENTREPRENEURSHIP WORKSHOP, NZ, 2011.

LORENTZ CENTER WORKSHOP ON CREATIVITY, MECHANISMS AND METHODS. University of Leiden, Netherlands. Spoke on the physical and computational mechanisms of creativity. September 2011.

RADIOLAB, NATIONAL PUBLIC RADIO, 2011.

THNK-THE AMSTERDAM SCHOOL OF CREATIVE LEADERSHIP. As visiting faculty, delivered a lecture on integrative creativity in April 2011.

AMERICAN PHYSICAL SOCIETY (APS), INVITED TALK: "ROBOTICS IN THE WORLD OF ENTERTAINMENT", 2011.

SPEAKER AT IEEE HUMAN ROBOT INTERACTION (HRI), 2011, "EFFECTS ON EXPECTATIONS WITH HUMANLIKE ROBOTS", UNVEILING THE NEW ZENO ROBOKIND.

EASTFIELD COMMUNITY COLLEGE, NATIONAL ROBOTICS WEEK GUEST LECTURER, INVITED NATIONAL SCIENCE FOUNDATION (NSF) SPEAKER, MARCH 2011.

TEXAS A&M UNIVERSITY, NATIONAL ROBOTICS WEEK GUEST LECTURER, INVITED NATIONAL SCIENCE FOUNDATION (NSF) SPEAKER, MARCH 2011.

PRAGYAN'11, CHENNAI INDIA, GUEST LECTURER, FEBRUARY 2011.

AMERICAN PHYSICAL SOCIETY (APS), INVITED TALK: "ROBOTICS IN THE WORLD OF ENTERTAINMENT", 2011.

BOYS AND GIRLS CLUB, ROBOTICS CLUB "Humanlike Robots". PLANO,TX, 2011.

SPEAKER AT IEEE HUMAN ROBOT INTERACTION (HRI), Workshop on Managing Expectations in Human Robot Interactions. Lausanne, Switzerland, 2011.

ASME SESSION CHAIR, "BIOMIMETIC ROBOTICS", 2011.

INVITED SPEAKER AT IEEE HUMAN ROBOT INTERACTION (HRI) WORKSHOP, 2010.

SPEAKER AT LONG BRANCH ELEMENTARY SCHOOL, 2010.

GUEST LECTURER AT THE UNIVERSITY OF PISA, 2009.

CARRERE ACADEMY OF ART, 2009.

U. MESSINA MEDICAL SCHOOL WORKSHOP ON ASSISTIVE TECHNOLOGIES, 2009.

CONSUMER ELECTRONICS SHOW (CES), lecture title "Character Robotics", SPECIAL SESSION ON ROBOTICS, 2009

SPEAKER AT IDEACITY, TORONTO CA, 2008.

SPEAKER FMX 2008, CEBIT, 2008, NEW ZEALAND CONSULATE IN HAMBURG 2008.

CO-ORGANIZER AND SPEAKER AT THE 2003 AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS) ANNUAL MEETING in Denver CO, of a symposium entitled "Biologically Inspired Intelligent Robotics". Co-organized with Yoseph Bar-Cohen of JPL/CalTech and Cynthia Breazeal of the MIT AI lab.

EXHIBITOR AND SPEAKER, AAAI NATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE, 2005.

SPEAKER AT SANDIA NATIONAL LABORATORIES, "COGNITIVE SYSTEMS WORKSHOP", Santa Fe New Mexico, July 2003. Talk entitled: "Facial Verisimilitude in Robotics as a Tool for Understanding Human Social Cognition".

SPEAKER/INVITED Speaker at the SPIE Smart Materials and Structures Conference, Electroactive Polymer Actuators and Devices (EAPAD) Symposium, San Diego, CA, March 2001, 2002, 2003, and 2004.

SPEAKER AT AMERICAN ASSOCIATION FOR ARTIFICIAL INTELLIGENCE CONFERENCE, IN EDMONTON CANADA "Identity Emulation; integrated aesthetic robotics", August 2002.

PARTICIPANT AND SPEAKER at the International Workshop on Perceptive Social Agents and Robots in San Diego, Jan. 9-10, 2003.

GUEST LECTURES AT UNIVERSITIES: MIT, KAIST, UCSD, Rhode Island School of Design (RISD), Carnegie Mellon, BROWN, Dartmouth, Sung Kyun Kwan University, the University of Messina Medical School, the University of Pisa, University of Memphis IIT, the University of Canterbury, the Art Center College of Design

in Pasadena, USC film school, USC ICT, Accademia Carrara, Richland College, the Palermo Academy of Fine Arts, U. Penn, Drexel, and the University of Washington HitLab.

Invited Talks at Google, EyeBeam, Telecom Tech, Dallas Public Schools, WIRED Nextfest, Society for Medical Innovation and Technology (SMIT), various elementary schools, middle schools and high schools, DARPA working sessions, and others.

SHOWS

ART FUTURA: TECNOPOLIS. "GHOSTS", intelligent robotics, mixed media. Buenos Airies, August, 2011.

ASME SESSION CHAIR, "BIOMIMETIC ROBOTICS", 2011.

MUSEUM OF SCIENCE AND INDUSTRY, "ZENO MACHINE", CHIGAGO, 2011.

SINGULARITY SUMMIT, "ZENO MACHINE", a conversational portrait of Zeno of Elea, September 2010.

"BINA MACHINA, ROBOTIC PORTRAIT OF BINA ROTHBLATT", Terasem Movement Ashram, Bristol VT, 2010. Reviewed on the front page of the NY Times, 2010

ACADEMY OF FINE ARTS IN CARRARA, MIA ALICE ROBOTIC SCULPTURE, May 2009.

THE ACADEMY OF FINE ARTS IN PALERMO, SICILY, MIA-ALICE, June 2009.

TED conference, I gave a TED talk and displayed robotic sculptures, 2009.

"SOULS AND MACHINES" SHOW at the Reina Sofia museum in Madrid, "JULIO THE UNCANNY" collaboration with David Byrne, 2008.

"ART FUTURA", ZENO ROBOT, in Barcelona, summer 2008.

"FAST FORWARD", Museum of Science and Industry in Chicago, 2008-2009.

"FRANKIE", in the EXPLORATORIUM SCIENCE MUSEUM, 2007.

VITRA DESIGN MUSEUM, "Future Face" Show, 2006.

"LIL PUNCTUM" in the "SECOND SKIN" SHOW, representing the Cooper Hewitt Design Museum in Essen Germany, summer 2006.

COOPER HEWITT SMITHSONIAN DESIGN TRIENNIAL, 2006-2008.

"ALBERT HUBO" at the APEC summit in Busan Korea, NOVEMBER 2005. Also showed at the winter Olympics, in Turin Italy, February 2006, at Nextfest 2006 and 2007, and in Dubai in 2008.

EYEBEAM, NY NY, speaker and panelist, on robotic sculptures, Nov. 2005.

"PHILIP K DICK ANDROID PORTRAIT, WITH VALIS ROOM", in UnReal show at the University of Texas, Dallas, September-November 2005. Reviewed in the NY Times, Washington Post, Chicago Sun, and WIRED.

OGDEN MUSEUM, NEW ORLEANS, "PHILIP K DICK ANDROID" AUGUST 2005.

WIRED MAGAZINE NEXTFEST, 2005, A WORLD TECHNOLOGY-FESTIVAL, CHICAGO, JUNE 05. "PKD-A, an Android Portrait of Philip K Dick".

TED conference (Technology Entertainment Design), robotic art display: Kbot and Stinky Dick the Pirate, 2004.

EXHIBITOR AND SPEAKER, 2005 AAAI NATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE.

"MCANIMOUS" GROUP SHOW AT MARKET GALLERY, LOS ANGELES 2004.

RISD ALUMNI SHOW, "DOG AUTOMATA ON FISHING POLE, DANCING THE STRANGE ATTRACTOR IN FAUX EFFORT TO ESCAPE". Los Angeles 2003.

"GYMNOSOPHORE", SCULPTURE SHOW AND INSTALLATION, 2001; SIDE STREET GALLERY, L.A. A two-man show with David Deaney, Gymnosophore offered functioning, sculpted hot-tubs for the use of visitors. Reviewed favorably in the Los Angeles Times art reviews by lead critic Christopher Knight.

"BLISSKRIEG—ENTER THE GYMNASIUM". An immersive, performance environment, Bliss-Krieg inspired participation, disorientation, creative scheming, and

unsettling transformation. Modeled after a themepark, this "Gymnasium" had waterslides, swimmable running river, and a cabalistic labyrinth, with nodes of sensual delight. The evening was run like an opera, with a climax of the dam opening to release a flood of 40,000 gallons of water to wash over the entire space. This work was the culmination of the "gymnasium" series (1991-1995). This event was built with support from several DFW-area arts groups: the D-crats, Good-Bad, Hazy Daze,and others. 1995.

"GYMNASIUM", RISD PROMENADE AND AUDITORIUM. Hot-tub performance event, with behavior imperatives involving sit-com improvisation via RPA rules, with participation by Seth MacFarlin creator of Family Guy, 1995.

"PRIMORDIAL OOZE BATH," SCULPTURE INSTALLATION ON THE RISD GREEN, 1995.
70 feet wide and 40 feet long, this yoni-lingual swimming-hole sprayed 1200 gallons of seaweed goo (carageenan) over hundreds of playful students, philosophically investigating the physics of creativity, garnering favorable reviews from CNN's Headline News, the front page of Providence Journal Bulletin, the L.A.Times, and the Chicago Tribune. This work was third in the Gymnasium series of performance-architectures.

"RPA—ROBOTIC PARTY ARCHITECTURE". Automated psychoactive architecture, designed to unlock wonder, creativity, and participation in the audience. This concept was designed for a Brown CS course, under the advice of Tom Dean, culminating in a term paper by the same name—RPA. Principles from RPA were used in numerous subsequent events including the Primordial Ooze Bath, Gymnasium, and the robotic personalities of my androids. 1994-1995.

"PROTOGYMNASIUM"—A "BEHAVIOR IMPERATIVE HAPPENING". A performance-event with performance edicts given weeks in advance to invitees, enabling a participatory improvisation. 1994.

"SAUSAGEMAN", A PUBLIC PERFORMANCE AT 2 COLLEGE STREET. This McCarthy-esque performance involved myself in tighty-wighty BVDs, a 40-foot sausage suspended on small towers, which then disintegrated into pieces of dissolving "manhood"—the plight of the aging male ego.

"SCUTTLING HEAD," My first humanoid Robot, built for a RISD independent study with prof. Gary Metz, and displayed at Brown/RISD festival of Art and Technology Festival called "PONG", 1995. This robotic self portrait of David Hanson, functioned as a human-relations telepresence robot. My sculpted robotic likeness rode atop a retractable 5' stalk emerging from an agile robotic rover, receiving control signals from a distant user for robotic head gestures, while transmitting video and 2-way audio to facilitate distant conversation. 1995.

"Disturbathon", founded by Hanson, this immersive, primal art environment inspires performance participation from the audience, who self-select into hecklers, wallflowers, and exhibitionists. 1989-2010.

OUTREACH

ADVISORY COMMITTEE, N.TX FIRST ROBOTICS, 2008-2011.
BOYS AND GIRLS CLUB, ROBOTICS CLUB "Humanlike Robots". PLANO,TX, 2011.
ADVISOR FOR STUDENTS AT UTD AND UTA, 2004-2011.
ADVISOR FOR SLOAN AWARD WINNING FILM PROJECT, W/ANYA MEKSYN, 2008-2011.
STEERING COMMITTEE FOR TEDX SMU, 2009.
SPEAKER AT LONG BRANCH ELEMENTARY SCHOOL, 2009.
CO-FOUNDER OF UTD BUSINESS PLAN COMPETITION, 2006.

PUBLICATIONS

Hanson, D., Mazzei, D., Garver, C., De Rossi, D., Stevenson, M. "Realistic Humanlike Robots for Treatment of ASD, Social Training, and Research; Shown to Appeal to Youths with ASD, Cause Physiological Arousal, and Increase Human-to-Human Social Engagement", Human Robot Interaction (HRI-IEEE), submitted and pending, 2012.

Hanson, D. "Robotics in the World of Entertainment", American Physical Society (APS) March Meeting Abstracts, 2011 - adsabs.harvard.edu, March 21-25, 2011.

Hanson D., Baurmann S., Riccio T., Margolin R., Dockins T., Tavares M., Carpenter, K., "Zeno: a Cognitive Character", AI Magazine, and special Proc. of AAAI National Conference, Chicago, 2009.

Bar-Cohen., Y., Hanson, D., *The Coming Robotics Revolution*, Springer Press, 2009.

Mavridis, N., Hanson, D. "The Ibn Sina Center: A case study in Augmented Reality Theater with Intelligent Robotic and Virtual Characters" *Proc. IEEE Ro-Man* 2009.

Kasap, Z., Moussa, M., Chaudhuri P., Hanson D., Magnenat-Thalmann N., "From Virtual Characters to Robots - A novel paradigm for long term human-robot interaction", ACM/IEEE Human Robot Interaction Conference 2009 (submitted, acceptance pending).

Poster presentation at IEEE ARSO'08: "Zeno, a Cognitively Capable Character", in Taiwan, 2008.

Hanson, D. "Humanizing Computer Interfaces with Humanlike Appearance and Capabilities", Ph.D. dissertation, successfully defended at the University of Texas at Dallas, May, 2007.

Hanson D., Priya S. "An Actuated Skin for Robotic Facial Expressions, NSF Phase 1 Final Report", National Science Foundation STTR award, NSF 05-557, 2006-2007.

Tadesse, Yonas; Priya, Shashank; Stephanou, Harry; Popa, Dan. and Hanson, David "Piezoelectric actuation and sensing for Facial Robotics" Journal of Ferroelectrics, vol. 345, Issue1, pp.13-25, 2006 (12 pages).

Hanson, David; Bergs, Richard; Tadesse, Yonas; White, Victor. Priya, Shashank "Enhancement of EAP actuated facial expressions by designed chamber geometry in elastomers" Edited by Bar-Cohen, Yoseph, Proceedings of the SPIE , vol. 6168, pp. 49-57, 2006.

Hanson D. "Expanding the Design Domain of Humanoid Robots", *Proc. ICCS CogSci Conference*, special session on Android Science, Vancouver, 2006.

Oh, J.H., Hanson, D., Kim, W.S., Han, Y., Kim, J.Y. and Park, I.W., 2006, "Design of android type humanoid robot albert HUBO," in *Proc. IEEE/RJS IROS Robotics Conference*, Beijing, 2006. Int. Conf. on Intell. Robots and Sys., IEEE/RSJ, pp. 14F-1433.

Hanson D., Bergs R. , Tadesse Y. , White V. , Priya S. "Enhancement of EAP Actuated Facial Expressions by Designed Chamber Geometry in Elastomers",*Proc. SPIE's Electroactive Polymer Actuators and Devices Conf., 10TH Smart Structures and Materials Symposium*, San Diego, USA, 2006.

Hanson D. "Expanding the Aesthetics Possibilities for Humanlike Robots", *Proc. IEEE Humanoid Robotics Conference*, special session on the Uncanny Valley; Tskuba, Japan, December 2005.

Hanson D. "Bioinspired Robotics", chapter 16 in the book *Biomimetics*, ed. Yoseph Bar-Cohen, CRC Press, October 2005.

Hanson D., Olney A., Prilliman S., Mathews E., Zielke M., Hammons D., Fernandez R., Stephanou H., "Upending the Uncanny Valley", *Proc. AAAI's National Conference*, Pittsburgh, 2005.

Hanson D., White V. "Converging the Capabilities of ElectroActive Polymer Artificial Muscles and the Requirements of Bio-inspired Robotics", *Proc. SPIE's Electroactive Polymer Actuators and Devices Conf., 10TH Smart Structures and Materials Symposium*, San Diego, USA, 2004.

Hanson D. "The Neural Basis of the Uncanny Valley", graduate research paper for Alice O'Toole in UTD Brain Sciences. Sept, 2003.

Hanson D., "Chapter 18: Applications for Electrically Actuated Polymer Actuators," in Electrically Actuated Polymer Actuators as Artificial Muscles, Bar-Cohen Y. (Ed.) SPIE PRESS, Washington, USA, Vol. PM98, 2nd ed. March 2004.

Hanson D., Rus D., Canvin S., Scmeirer G., "Applications of Bio-inspired Robotics", Ch.10 of Biologically Inspired Intelligent Robots. Bar-Cohen, Y and Breazeal, C. (Ed.) SPIE Press, May 2003.

Hanson, D. "EAP Actuator Design for Biologically-inspired Face-Based Communication Robots". *Proc. SPIE's Electroactive Polymer Actuators and Devices Conf., 9th Smart Structures and Materials Symposium*, San Diego, USA, 2003.

Pioggia G., Hanson D., Dinelli S., Di Francesco F., Francesconi R., De Rossi D. "The Importance of Nonverbal Expression to the Emergence of Emotive Artificial Intelligence Systems", [4695-51], *Proc. SPIE's Electroactive Polymer Actuators and Devices Conf., 8th Smart Structures and Materials Symposium*, San Diego, USA, 2003.

Hanson, D. "Bio-inspired Facial Expression Interface for Emotive Robots", Proc. AAAI National Conference in Edmonton, CA, 2002.

Hanson D. and Pioggia G., "Entertainment Applications for Electrically Actuated Polymer Actuators," Ch 18 of Electrically Actuated Polymer Actuators as Artificial Muscles, SPIE PRESS, Washington, USA, Vol. PM98, Ch. 18, 2001.

Hanson D., Pioggia G., Bar-Cohen Y., De Rossi D., "Androids: Application of EAP as Artificial Muscles to Entertainment Industry," *Proc. SPIE's Electroactive Polymer Actuators and Devices Conf., 7TH Smart Structures and Materials Symposium*, Newport Beach, USA, 2001.

JPL EAPAD newsletter, artificial muscle articles: spring 2001, fall 2002, 2004, 2006.

PRESS ATTENTION

Hanson has been featured in numerous popular media outlets including NY Times, Scientific American, The Figaro, The New Yorker, Smithsonian Magazine, Science Magazine, Popular Science, Good Morning America, the BBC, CNN, and an August 2011 feature in National Geographic. Here are a few select articles:

http://spectrum.ieee.org/automaton/robotics/humanoids/why-we-should-build-humanlike-robots

http://www.pbs.org/wgbh/nova/tech/social-robots.html

http://www.gq.com/news-politics/big-issues/201103/robots-say-the-damnedest-things

http://spectrum.ieee.org/automaton/robotics/humanoids/david-hanson-robot-heads

http://discovermagazine.com/photos/body-shop-where-life-like-androids-born

http://www.ted.com/talks/david_hanson_robots_that_relate_to_you.html
http://discovermagazine.com/photos/body-shop-where-life-like-androids-born
http://www.acm.org/ubiquity/interviews/v7i18_hanson.html
http://www.absolutearts.com/artsnews/2001/04/02/28321.html
http://news.cnet.com/8301-17938_105-10391357-1.html
http://www.newyorker.com/reporting/2009/11/02/091102fa_fact_groopman?currentPage=all
http://www.smithsonianmag.com/science-nature/Birth-of-a-Robot.html
http://ndeaa.jpl.nasa.gov/nasa-nde/nde-aa-l/clipping/Popular-Science-Sept-2003.pdf
http://www.usnews.com/money/business-economy/small-business/articles/2008/01/14/rise-of-the-robots.html
http://www.pcmag.com/article2/0,2817,2036407,00.asp
http://www.sciencemag.org/content/vol299/issue5611/r-samples.shtml
http://iiae.utdallas.edu/news/pop_science.html

EDUCATION

THE UNIVERSITY OF TEXAS, DALLAS, Ph.D. in Interactive Arts & Engineering/Aesthetic-Studies 4.0 GPA cumulative, May 2007.

UCSD (*visiting student, 1 semester*) Cognitive Science, w/ Jochen Triesch, 2003.

UCLA (*visiting student, 1 semester*) Graduate Art, studied w/Paul McCarthy, 2003.

RHODE ISLAND SCHOOL OF DESIGN BFA Film-Video, 1996; Honor Student.

BROWN UNIVERSITY *(special student via RISD)* courses in Holography, Advanced Holography, 1993-94; Computer Science, 1995-96.

HIGHLAND PARK HIGH SCHOOL, 1988. ARTS MAGNET HIGH SCHOOL, DALLAS;1986-1987.

SKILLS

SCULPTURE Figurative sculpted characters up to thirty feet in height and as small as 4"; skilled in clay, foam, supersculpie, fiberglass, concrete, silicone, urethane, moldmaking and casting.

ROBOTICS/ANIMATRONICS As an undergrad, I programmed robots in the Foxboro AI lab at Brown, and developed the "scuttling head" telerobot at RISD. 1999-2001, in Disney Imagineering's MAPO Animatronics shop Technical Development, I designed electronics and mechanical systems, machined robot parts, coded C, C++, and assembly for Motorola microcontrollers. For my PhD research U. Texas at Dallas, I have developed a series of social robots as figurative sculpture. These devices make realistic facial expressions, affect eye-contact with people, and verbally interact with automatic speech recognition. To improve expressivity and applicability, I invented the patent-pending "structured porosity elastomer manufacturing" (SPEM) silicone skin that requires less than 1/20th the force of materials used in animatronics. These robots have been called "most advanced in the world" by the BBC, and have been profiled in *Science*, *IEEE Spectrum*, and *AI* magazine.

MATH/SCIENCE/TECH Publications in Science, IEEE Spectrum, SPIE, AAAI, and Cognitive Science, in the areas of materials science, nanotech, cognitive science, robotics, mechanical engineering, and intelligent software systems. Graduate

coursework in cognitive science at UTD and UCSD. Basic skills include Holography, Basic Electronics design, chemistry, cognitive science.

COMPUTER Programming: Assembly (with PIC microcontrollers), C++, html.

COMPUTER Applications: Proficient in a wide array of applications, including Maya, PhotoShop, Director, Illustrator, Avid, Matlab, Excel.

FILM/ VIDEO BFA in film/video/animation from RISD; wrote, produced, directed, shot, edited works up to 13 minutes in length. Freelance video work done for CNN and MTV. Designed and co-built my own 3D video camera and shot 3D video.

OTHER ARTS Illustration, painting, figure drawing, conceptual art: http://davidhanson.smugmug.com/gallery/819164_ngqQh .

WRITING Published short story author, science writer, & poet, 2nd place Texas State Poetry award in 1987.

EMPLOYMENT

UNIVERSITY OF TEXAS AT ARLINGTON 2011- Present.

Adjunct Professor of Computer Science and Engineering. Teaching Robotics and advising graduate students. Focus: integrated aesthetics, perception and engineering design practice for human-robot interface and A.I. design.

HANSON ROBOKIND LLC February 2011- Present

Founder, CTO, Manager, This subsidiary of Hanson Robotics is dedicated to releasing small androids (67cm and smaller) called RoboKind, as consumer product, educational platforms and autism treatment. transitioned from prototype to product, achieving self-sustaining status (surviving on revenue since October 2008), and building a reputation for the most lifelike robots in the world.

HANSON ROBOTICS INC March 2003- Present

Founder, CEO, Chief Scientist, researching and manufacturing human-like robots and constituent technologies. Successfully raised $2,150,000 in investment and research grants, going from prototype to product, surviving on revenue since October 2008, and renowned for the world's most lifelike robots.

UNIVERSITY OF NORTH TEXAS, 2010.

Adjunct Professor in Fine Arts. Teaching New Media: Kinetic and Interactive Sculpture.

UNIVERSITY OF TEXAS AT DALLAS, 2010

Instructor of Independent Studies in Interactive Sculpture.

NATIONAL SCIENCE FOUNDATION, PIRE AWARD COMMITTEE MEMBER, 2010.

NATIONAL SCIENCE FOUNDATION, 2009. MARCH AND NOVEMBER

Panelist. Reviewing scientific research proposals.

PAUL MCCARTHY June 2002- June 2003

Sculptor, Artist's Assistant, Robotics Designer

ART CENTER COLLEGE OF DESIGN IN PASADENA September- December 2002

Studio Instructor of robotics, electronics and mechanics in Graduate Industrial Design.

JET PROPULSION LABORATORY Spring 2002

Robotics Development Contract Building a robot face as test platform for ElectroActive Polymer Actuators.*http://ndeaa.jpl.nasa.gov/nasa-*

nde/lommas/eap/EAP-web.htm

ERIC SWENSON August 2001- February 2002 *Artist's Assistant*

WALT DISNEY IMAGINEERING (contracting through TAC) 1996, 1998 - 2001

Sculptor, 1996 and 1998-2000

Sculpting dozens of characters and props for parks incl. Tokyo Disney Sea, Disney's California Adventure, Tokyo DisneyLand and Walt Disney World.

Robotics and Animatronics Developer, Technical Development 1999-2001

I led the design and construction of an autonomous, walking robotic character, which would track humans and give chase. My duties included lead mechanical and electronics design, AI programming in C, machining, and visual design.

I also headed an investigation into Electro-Active Polymer (EAP) actuators (artificial muscles), building functioning prototypes and writing a paper/book chapter published by SPIE.

UNIVERSAL STUDIOS, VIA ADIRONDACK SCENIC INC May - September, 1998

Sculptor Producing large mythical creatures for Universal Studios' "Islands of Adventure" theme park.

DAVID HANSON, LLC 1993 - 1998

Freelance Artist and Designer, contracting for numerous clients including Atlantis Casino and Stromberg Architectural

Activities included project ideation and design mock-up, communication and negotiation with clients, maintenance of a workshop and office with full-time employees, maquette sculpting, and full-scale sculpture production. My sculptures included 26' tall marlins, seahorses, sea turtles, nautiluses, numerous mythical creatures, etc.

KERN SCULPTURE COMPANY 1996 - 1998

Lead Sculptor, Asst Project Manager, Interim Head of Sculpture Dept.

As a sculptor, I produced over 30 works for clients including Disney, Universal Studios, Mardi Gras, and many casinos and resorts. As Department Head, I managed a crew of four, maintained the shop, dealt with clients and managed projects.

BROWN UNIVERSITY, 1995

Optical engineering technical assistant.

I worked with Dr. Heinrich Gerritsen and Mary Lou Jepson to design and build novel space shuttle lighting system, which won a NASA Space Act Monetary Award.

CNN, 1993 and MTV, 1995

Freelance Videographer, Electronic News Gathering (ENG).