

Asimo

- Endereço: <http://world.honda.com/ASIMO/>
- Construtor: Honda

Foi mostrado ao público em 2000. A Honda tem como objectivo final a comercialização deste robot.



Advanced → New Era
 Step in → Stepping
 Innovative → Innovation
 Mobility → Mobility

ASIMO stands for Advanced Step in innovative Mobility

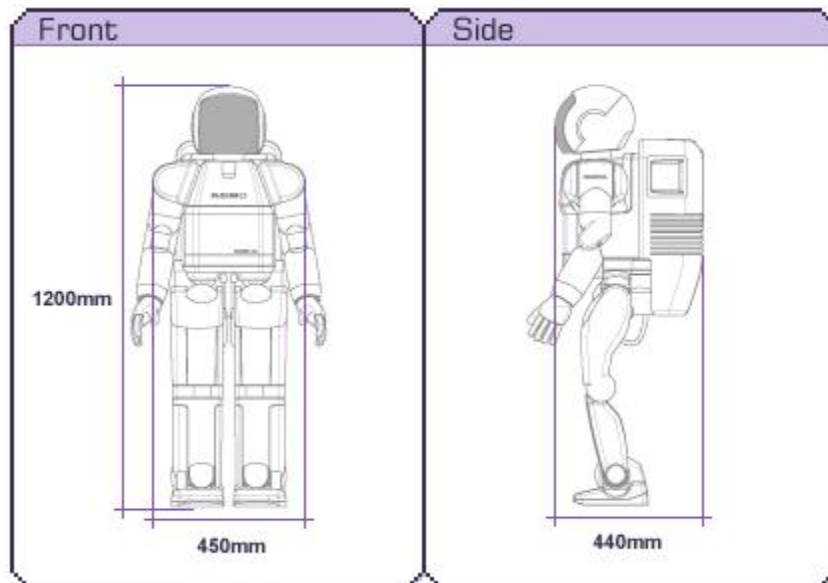


- Especificações:

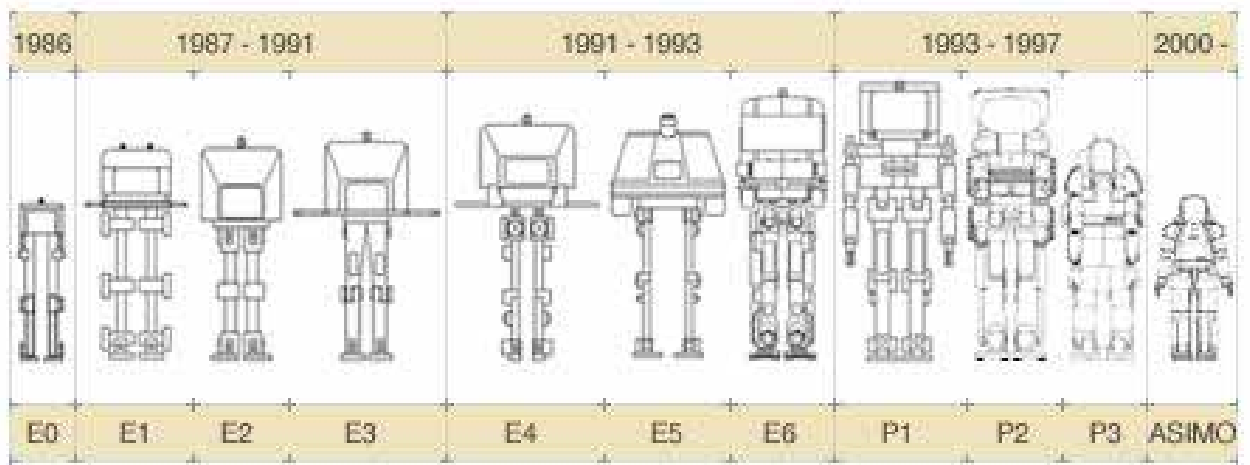
Specifications		
Weight	52kg	
Walking Speed	0-1.6km/h	
Walking Cycle	Cycle Adjustable, Stride Adjustable	
Grasping Force	0.5kg/hand(5-finger hand)	
Actuator	Servomotor+Harmonic Speed Reducer +Drive Unit	
Control Unit	Walk/Operating Control Unit, Wireless Transmission Unit	
Sensors	Foot	6-Axis Foot Area Sensor
	Torso	Gyroscope & Acceleration Sensor
Power Section	38.4V/10AH(Ni-MH)	
Operating Section	Workstation and portable Controller	

Degrees of Freedom (For Human Joints)		
Head	Neck Joint(U/D,RT)*1	2DOF
Arm	Shoulder Joint(F/B,U/D,RT)	3DOF
	Elbow joint(F/B)	1DOF
	Wrist joint(RT)	1DOF
Hand	5DOF X 2arms=10DOF	
	5fingers(Grasping)	1DOF
Leg	1DOF X 2hands=2DOF	
	Hip joint(F/B,L/R,RT)	3DOF
	Knee joint:(F/B)	1DOF
	Ankle joint:(F/B,L/R)	2DOF
		6DOF X 2legs=12DOF

*1
 F/B : Forward/Backward U/D : Up/Down
 L/R : Left/Right RT * Rotation DOF: Degrees of Freedom

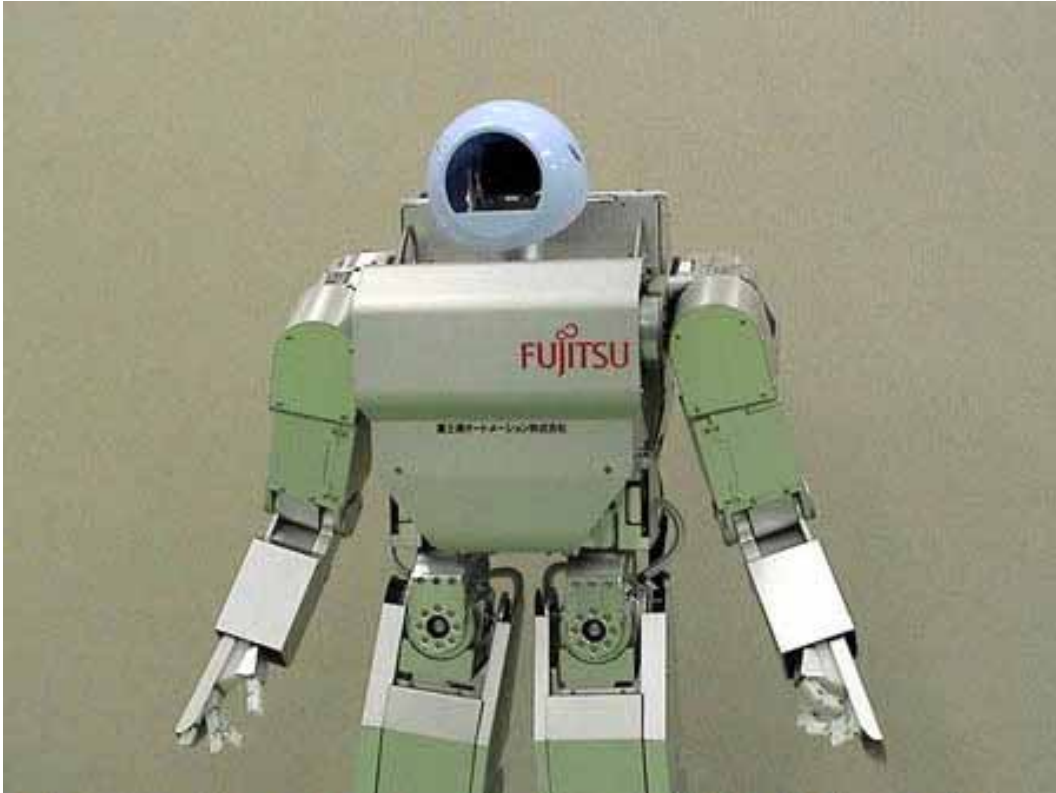


Antecessores do Asimo:



Hoap-2

- Endereço: <http://www.automation.fujitsu.com/en/products/products09.html>
- Construtor: Fujitsu



- Especificações:

-Peso: 7Kg;

-Altura: 50cm;

-DOF: Total 25 degree of freedom

Waist: 1 degree of freedom

Legs: 6 degrees of freedom x 2

Arms: 4 degrees of freedom x 2

Hands: 1 degree of freedom x 2

Neck: 2 degree of freedom

Comprimentos dos elos:

ARM_LINK1 = 0.100m

ARM_LINK2 = 0.101m

ARM_LINK3 = 0.146m

LEG_LINK1 = 0.039m

LEG_LINK2 = 0.100m

LEG_LINK3 = 0.100m

LEG_LINK4 = 0.037m

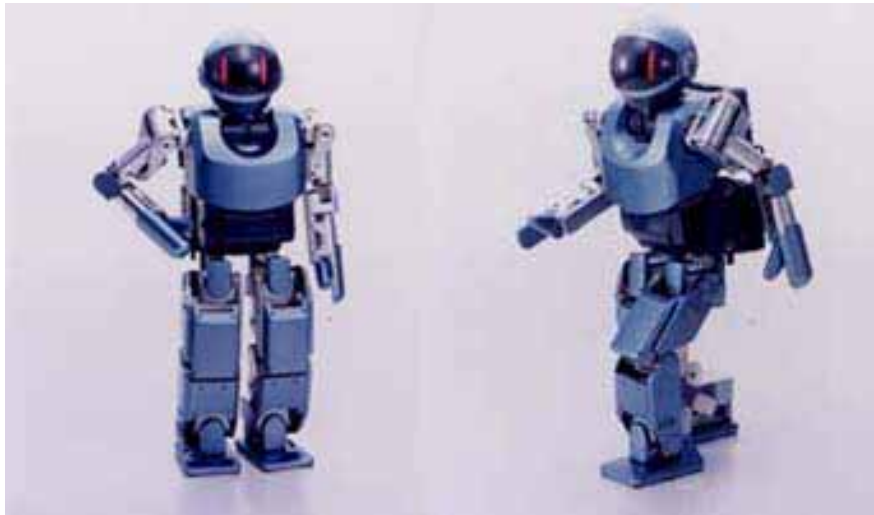
BODY_LINK1 = 0.090m

BODY_LINK2 = 0.0315m
 HEAD_LINK1 = 0.0025m
 WAIST_LINK1 = 0.055m
 WAIST_LINK2 = 0.034m

Nota: Ver ficheiro **hoap2designspec.pdf**. e **011_Senchans_Humanoid.pdf** (Esta equipa da universidade de Osaka usa a plataforma da Fujitsu).

SDR-3X

- Endereço: <http://www.sony.net/SonyInfo/News/Press/200011/00-057E2/>
- Construtor: Sony



- Especificações:

CPU	64 Bit RISC Processor (x2)	
Internal Memory	32MB DRAM (x2)	
Operating System	Aperios (Sony's original real time OS)	
Robot Control Architecture	OPEN-R	
Program Storage Media	16MB Memory Stick (x2)	
Joints/Degrees of Freedom	Head:2 degrees of freedom Body:2 degrees of freedom Arms:4 degrees of freedom (x2) Legs:6 degrees of freedom (x2) (Total of 24 degrees of freedom)	
Internal Sensors	Visual Input	180,000 1/5 inch CCD Color Camera
	Voice Input	Microphone (x2)
	Distance Detection	Infrared Distance Sensor
	Acceleration Detection	Dual axis accelerometer
	Angular Rate Detection	Dual axis angular rate sensor

	Touch Detection	Contact Sensor (x8)
Voice Output		Speaker
Input/Output		PC Card Slot (Type II) Memory Stick Slot (x2)
Walking Speed		Approx. 15m per minute
Mass		Approx. 5.0 kg (with battery & memory stick included)
Dimensions (height x width x depth)		Approx. 500 x 220 x 140 mm

QRIO:

- Endereço: <http://www.sony.net/SonyInfo/QRIO/top.html>
- Construtor: Sony



- Especificações: Não existe informação disponível no site da Sony.

Nota: Ver vídeos Robocup 2003.

PINO

- Endereço: <http://www.symbio.jst.go.jp/PINO/index.html>
- Construtor: ERATO Kitano Symbiotic Systems Project

Este projecto pretende que qualquer pessoa possa construir um robot em sua casa com componentes baratos e acessíveis. Para isso é disponibilizada toda a informação técnica necessária a sua construção no site.



- Especificações:

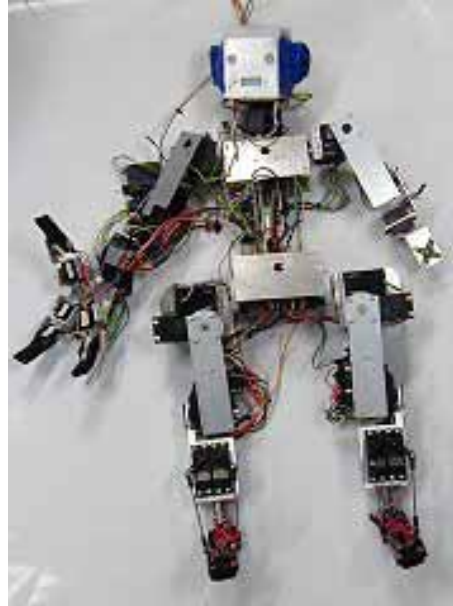
Dimension	Height	70cm
	Width between both shoulders	32cm
	Width of hip	20cm
	Length of leg	30cm
Weight	4.5kg	
Degree of Freedom	26DOFs	
	Neck	2DOFs
	Backbone	2DOFs
	Arms	5DOFs in each
	Legs	6DOFs in each
Actuator	Servo module(Torque 20 kgcm) Futaba S5301	14
	Servo module(Torque 9 kgcm) Futaba S9402	12

Sensor	Vision sensor(CMOS sensor)	1
	Force sensor(FSR)	8
	Joint angle sensor(Potentiometer)	26
Host computer	PC(Pentium III 733MHz) Memory 512MB	
Operating system	RedHat Linux6.2 Kernel 2.2.14-5.0 RT-Linux2.2	
Development tool	ALTERA Max+PLUS II BASELINE YCSH	
Robot controller	SH2(HD64F7050 20MHz) CPLD(EPF10K30ARC240-3)	
AD board	Contec AD12-64(PCI)	
Frame grabber	I/O DATA GV-VCP2/PCI	
Cable	Small Gauge Coaxical Cable & CoaxcalCable x 50Power(7A)	
Power resource	EWS300-6 Input: AC100-120V 8A, AC200-240V 4A 50/60Hz 410WATTS Output: DC6V 50A	
Exterior	Leaser beam lithography(30 parts)	
Structural material	Duralumin ABS regin	

Nota: Ver ficheiro **robocup2000_yamasaki.pdf** e **humanoids2000_yamasaki.pdf**.

Elvis:

- Endereço: <http://humanoid.fy.chalmers.se/>
- Construtor: Goteborg University



Elvis is the oldest of the humanoids. Prototype 1 was assembled in the summer of 1998 and the initial projects included adaptive balance evolution and extensive hearing and vision experiments. Elvis took his first steps in July 1998 and learned to toast in October the same year. In August 1999 Elvis was equipped with a new head, torso and legs. He took his first autonomous steps in April 2000 and participated in Expo2000 in Hannover, Germany, the following summer.

- Especificações:
-Altura: 60cm

Nota: ver ficheiro **elvis.pdf**. (An Evolutionary Architecture for a Humanoid Robot)

H6

- Endereço: http://www.jsk.t.u-tokyo.ac.jp/research/h6/H6_H7.html
- Contrutor: Universidade de Tokyo



- Especificacoes:

-Altura:1.37m

-Peso:35Kg

The robot has a total of 35 degrees of freedom (DOF): 6 for each leg, 1 for each foot (toe joint), 7 for each arm, 1 for each gripper, 2 for the neck, and 3 for the eyes.

H7

- Endereço: http://www.dh.aist.go.jp/research/humanoid/H6_H7.html
- Construtor: Universidade de Tokyo



Especificações:

The height of the robot is 1470mm, the width is 600mm, and the mass is 58kg including 3.2kg of batteries. The robot has a total of 30 degrees of freedom (DOF): 6 for each leg, 1 for each foot (toe joint), 6 for each arm, 1 for each gripper, and 2 for the neck. All major joints are driven by DC motors and Harmonic drive gears. An onboard PC equipped with dual PentiumIII-1.1GHz processors running RT-Linux is used for real-time servo and balance compensation, as well as coordinating high-level 3D vision and motion planning component software modules. The system is connected to the network via wireless ethernet. Thus, the robot is fully self-contained (it can be operated without any external cables).

ROBO-ERECTUS:

- Endereço: <http://www.robo-erectus.org/>
- Construtor: ARICC (Advanced Robotics and Intelligent Control Centre) in the School of Electrical and Electronic Engineering, Singapore Polytechnicis.



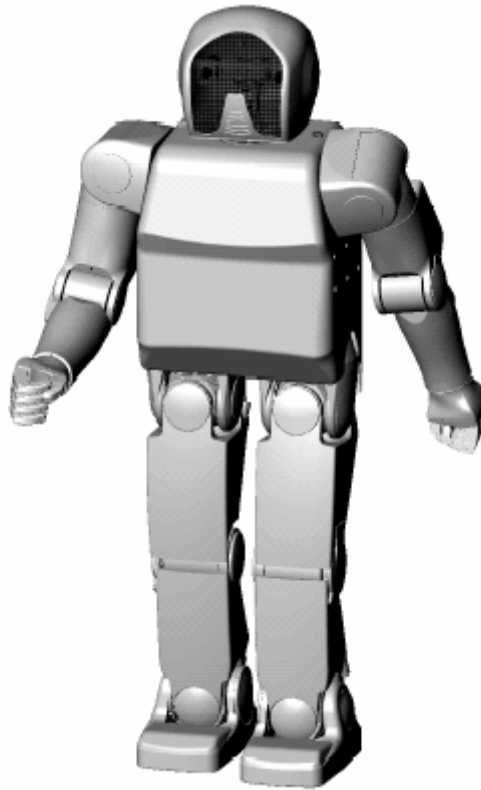
- Especificações:

	RE40I	RE40II	RE50II	RE80II
Height	40 cm	40 cm	50 cm	80 cm
Weight	2.5 kg	4 kg	5 kg	7 kg
Total DOF	10	22	22	22
DOF arrangement	Legs – 5 x 2	Neck – 2 Arms – 4 x 2 Legs – 6 x 2	Neck – 2 Arms – 4 x 2 Legs – 6 x 2	Neck – 2 Arms – 4 x 2 Legs – 6 x 2
Sensors	accelerometers, force sensors, gyros, range sensors and etc.			
Vision	stereo camera			
Controller	Multi-control mode: (1) PC; (2) Microcontroller; (3) PDA; (4) Wireless			
Power	NiMH batteries			

Nota: Ver ficheiro **010_Robo-Erectus_Humanoid.pdf** (Robo-Erectus: A Soccer-Playing Humanoid Robot) e videos Robocup 2003.

ARNE

- Endereço: ????
- Construtor: NE Company, St. Petersburg, Russia



The ARNE-02 robot is 123 cm tall and weighs about 54 kg. It has 28 degrees of freedom: 6 in each leg, 5 in each arm, 2 in each hand and 2 in head.

Nota: Ver ficheiro **001_ARNE_Humanoid.pdf**.

GuRoo

- Endereço: http://www.itee.uq.edu.au/%7Edamien/_guroo/the_guroo.htm
- Construtor: University of Queensland, Brisbane, Australia



- Especificações:

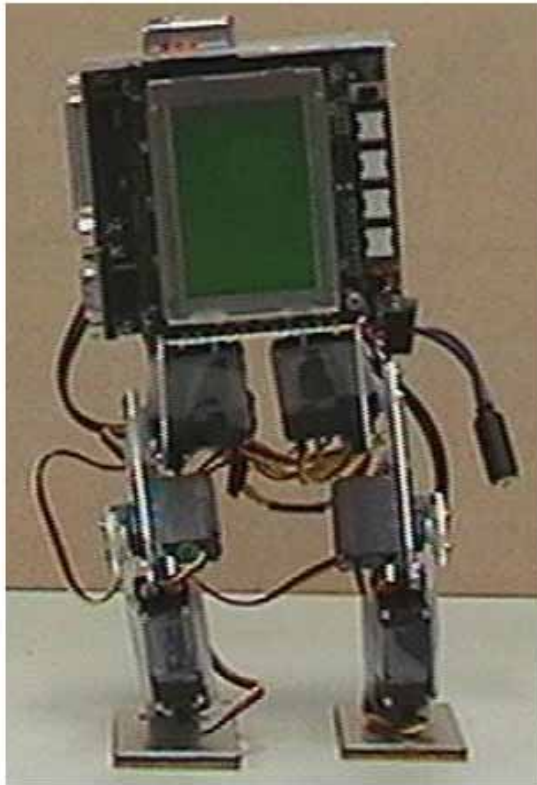
The GuRoo is an autonomous, 23 degree of freedom humanoid, 1.2m tall and weighing in at approximately 38kg.

Location	No. of DOF (2 x indicates left and right)	Description
Head	2	Pitch + Yaw
Shoulder	2 x 2	Pitch + Roll
Elbow	2 x 1	Pitch
Waist	3	Pitch + Roll + Yaw
Hip	2 x 3	Pitch + Roll + Yaw
Knee	2 x 1	Pitch
Ankle	2 x 2	Roll + Pitch

Nota: Ver ficheiro **005_GuRoo_Humanoid.pdf**.

Tao-Pie-Pie

- Endereço:???
- Construtor: University of Auckland



- Especificações:

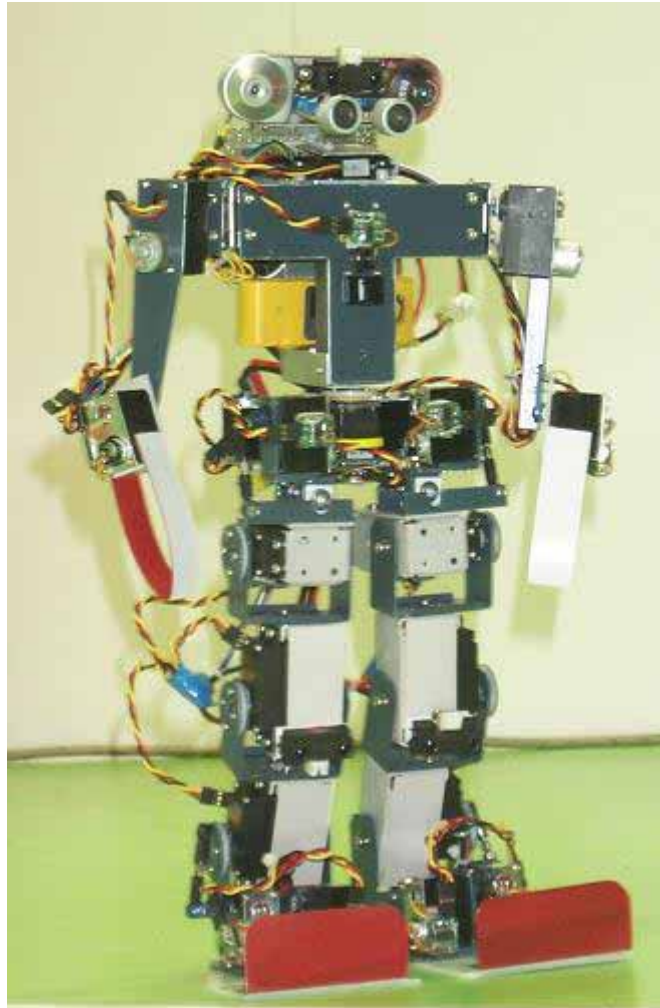
-Altura: 28cm

-Peso: 2Kg

Nota: Ver ficheiro **012_Tao-Pie-Pie_Humanoid.pdf** e vídeos Robocup 2003.

Barukii2

- Endereço: <http://homepage3.nifty.com/Chocopa/fp/>
- Construtor: Foot-Prints



- Especificações:

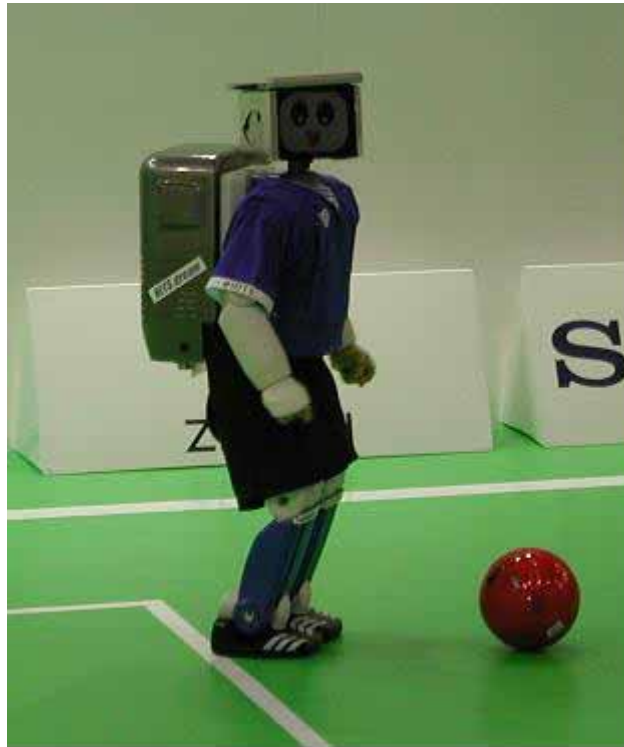
-Altura: 40cm

-Peso: 2.5Kg

Nota: Ver ficheiro **004_Foot-Prints_Humanoid.pdf** e vídeos Robocup 2003.

Firststep's

- Endereço: <http://www.hondacollege.ac.jp/> (em japonês)
- Construtor: Honda International Technical School (HITS)



- Especificações:

-Altura 1.20m

-Peso:50Kg

Nota: Ver ficheiro **007_HITSdream_Humanoid.pdf** e vídeos Robocup 2003.

Isaac

- Endereço: <http://www.isacrobot.org/>
- Construtor: Politécnico di Torino

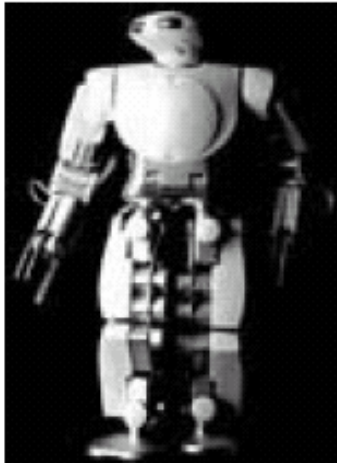


- Especificações:
 - Peso: 15Kg
 - Altura: 85cm

Nota: Ver ficheiro **008_Isaac_Humanoid.pdf** e vídeos Robocup 2003.

ERATO

- Endereço: <http://www.symbio.jst.go.jp/>
- Construtor: ERATO Kitano Symbiotic Systems Project



- Especificações:

-Altura: 38 cm

-Peso: 2.4 kg

Nota: Ver ficheiro **002_ERATO_Kitano_Project_Humanoid.pdf**.

Murphy

- Endereço: <http://www.docs.uu.se/robocup/DVP2001/>
- Construtor: Uppsala University, Sweden.



- Especificações:

-Altura: 1.80m

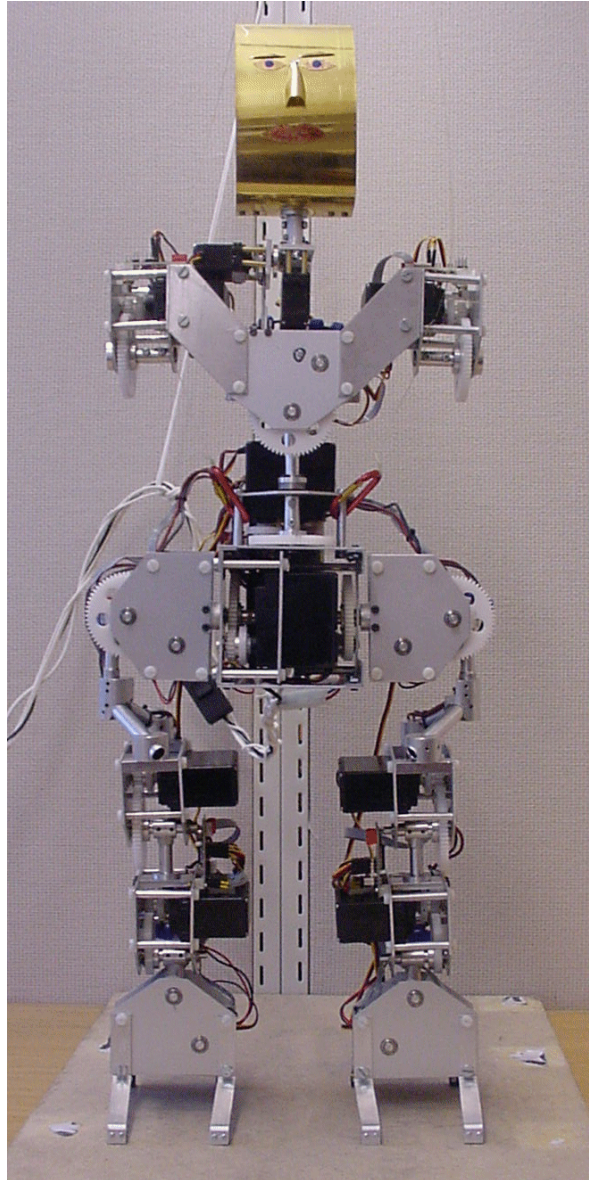
-Peso:130Kg

Murphy is a 180 cm tall and 130 kg heavy humanoid who is equipped with muscles able to pull about 4000 N.

Nota: Ver ficheiro **009_Murphy_Humanoid.pdf** e vídeos Robocup 2003.

Elvira

- Endereço: <http://www.hh.se/stud/pt00elpr/>
- Construtor: **Halmstad University**



- Especificações:

-Altura: 80 cm
-Peso: 5kg.

Johnnie

- Endereço: http://www.amm.mw.tumuenchen.de/Forschung/ZWEIBEINER/johnnie_e.html
- Construtor: Technische Universität München



- Especificações:

A total of 17 joints is included in the robots structure. The overall weight is about 40kg, the height is 1,80m

Silf-H2

- Endereço: <http://www02.so-net.ne.jp/~itou/Silf-H2.html> (em japonês)
- Construtor: Katsuhisa Ito



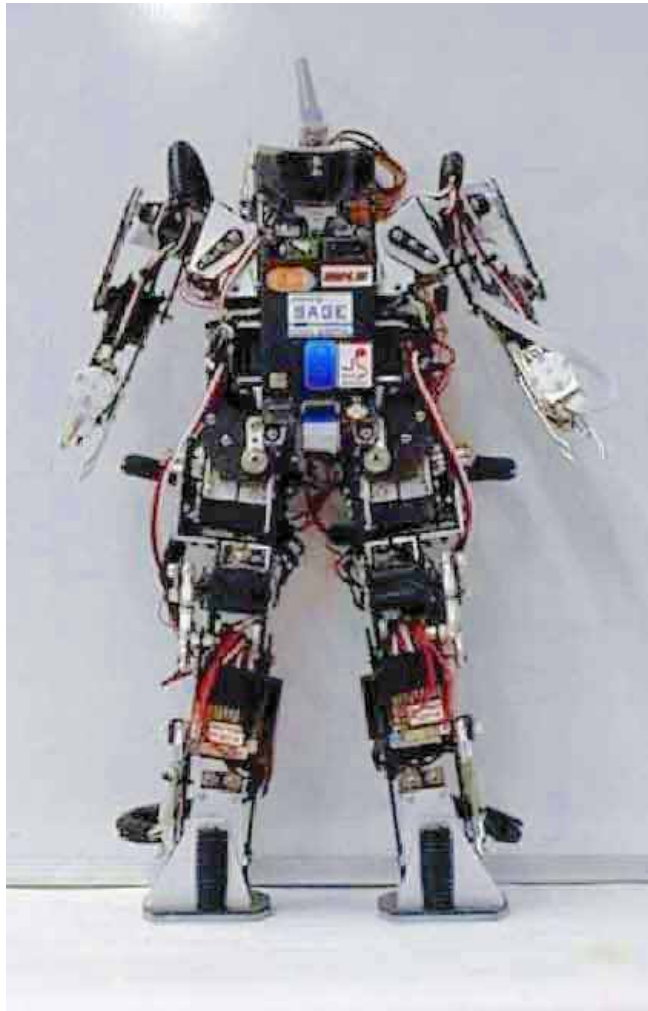
- Especificações:

-Altura: 248mm

-Peso: 730g

Mk.5

- Endereço: <http://www-esys.me.aoyama.ac.jp/humanoid/mk/mk5.html> (em japonês)
- Construtor: Aoyama Gakuin University



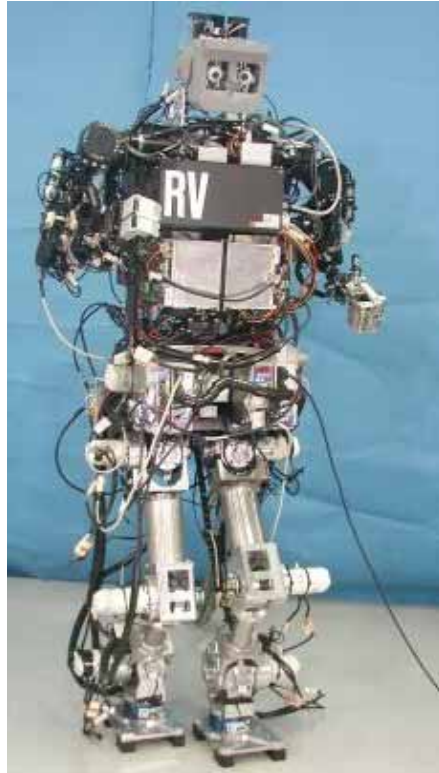
- Especificações:

-Altura: 35.6cm

-Peso: 1.9Kg

WABIAN RIV

- Endereço: <http://www.takanishi.mech.waseda.ac.jp/>
- Construtor: Waseda University



- Especificações:

-Altura:1.89m
-Peso:131.4Kg

Lucy

- Endereço: <http://lucy.vub.ac.be/>
- Construtor: Multibody Mechanics Group of the Department of Mechanical Engineering at the Vrije Universiteit Brussel



- Especificações:

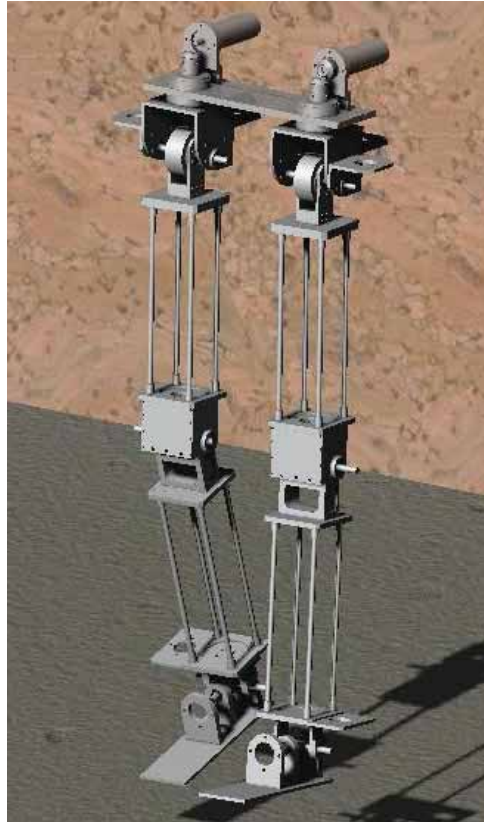
-Altura: 150cm

-Peso: 30Kg

This robot is restricted to move only in the sagittal plane due to its one dimensional joints of which each of them are powered by an antagonistic pair of Pleated Pneumatic Artificial Muscles. These muscles are lightweight pneumatic actuators which work at low pressures and can be directly coupled without complex gearing mechanisms.

Nusbit

- Endereço: http://guppy.mpe.nus.edu.sg/legged_group/3dbiped.htm
- Construtor: The National University of Singapore

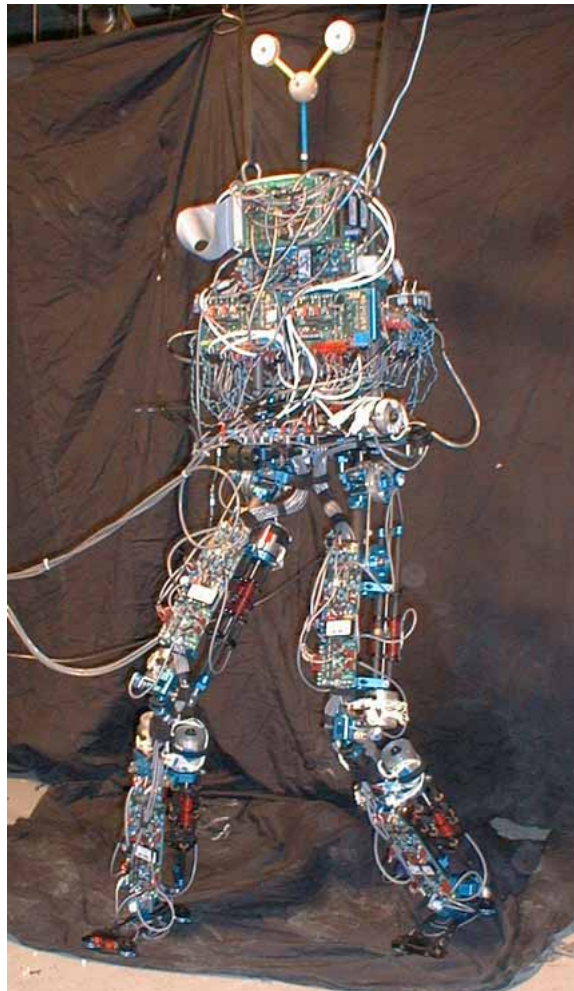


- Especificações:

DOFs	12
No. of Links	7
Size (Height)	1.20m
Weight	(to be completed)
Power Supply	External
Actuation	DC Motors

M2

- Endereço: <http://www.ai.mit.edu/projects/leglab/robots/robots.html>
- Construtor: MIT



M2 is a 3D bipedal walking robot which is currently being developed in the MIT Leg Laboratory. The robot has 12 active degrees of freedom: 3 in each hip, 1 in each knee, and 2 in each ankle. It will be used to investigate

Nota: Ver ficheiro **paluska-masters-m2.pdf** (Mestrado: Design of a Humanoid Bipod for Walking Research).

Outros sites de interesse:

Robotics and Automation Society:

<http://humanoids.cs.tum.edu/>

Robocup 2002:

<http://www.robocup.or.jp/fukuoka/>

Robocup 2003:

<http://www.robocup2003.org/Default.jsp>

Robocup 2004:

<http://www.robocup2004.pt/>

Robodex 2003:

<http://www.robodex.org>

Catalogo com informação acerca de todos os robots humanóides construídos:

<http://www.uc3m.es/uc3m/dpto/IN/dpin04/indexrob.html>

Site com com muitos links relacionados com robótica:

<http://www.joinme.net/robotwise/>

Site de artigos e links para sites de robótica:

<http://robots.net/>

Site com alguns links de interesse:

<http://www.androidworld.com/>

Conjunto de links para sites de robótica:

<http://www.robotcafe.com/>

Development of Waseda Robot:

<http://www.humanoid.waseda.ac.jp/booklet/katobook.html>

IEEE-RAS International Conference on Humanoid

:Robots <http://www.humanoid.waseda.ac.jp/Humanoids2001/>

Graphical Simulation and Virtual Robotics:

<http://www.jsk.t.u-tokyo.ac.jp/~kuffner/humanoid/simulation.html>

Delft Bio-robotics Laboratory:

http://www.ocp.tudelft.nl/mms/dbl/dbl_research.htm

European Association for research in legged robots:

<http://www.earlr.gr/earlr/projects/projects.html>

Institute of Automatic Control Engineering – Universidade de Munique:
http://www.lsr.ei.tum.de/index_en.html

Biped Robot 'Monroe':
http://www.mechatronics.mech.tohoku.ac.jp/~kumagai/research/monroe/biped_e.html

University of New Hampshire:
<http://www.ece.unh.edu/robots/robotour.htm>