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iCub

iCub is...

an open source platform for research into humanoid robotics, brain and cognitive sciences, that has been adopted by more than 20 laboratories worldwide. It has the shape of a human child with hands for manipulating objects and likewise sensors for seeing, hearing and touching. The robot was designed in such a way to facilitate natural interaction with people, and more in general with the environment, to learn from the fellow humans what and how to do things.

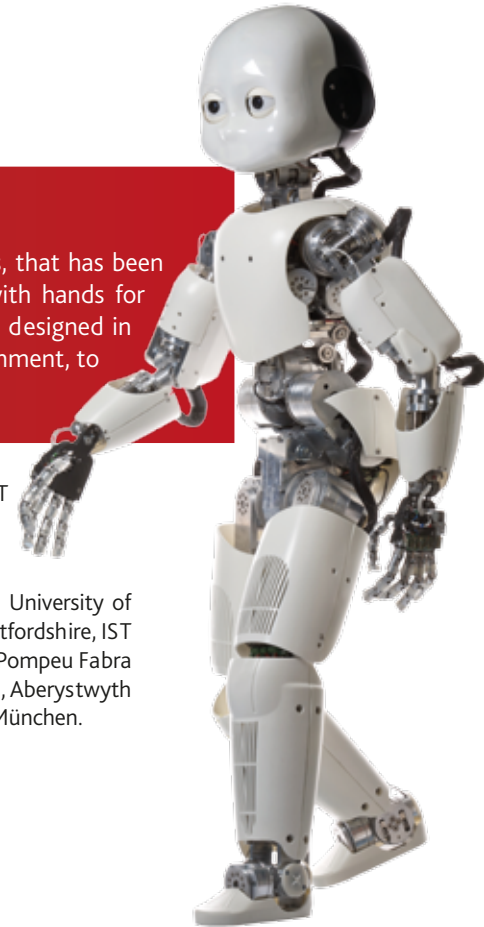
iCub is an international project on humanoid robotics developed at the Istituto Italiano di Tecnologia - IIT in Genoa (Italy) in cooperation with leading institutions in Europe and funded in part by the European Commission Cognitive Systems and Robotics program.

Besides IIT in Genoa, the iCub partners are University of Genoa, Scuola Superiore Sant'Anna in Pisa, University of Ferrara, the company Telerobot in Genoa, University of Uppsala, University of Sheffield, University of Hertfordshire, IST in Lisbon, EPFL in Lausanne, University of Zurich, the CNR in Rome, INSERM in Lyon, UPMC in Paris, the Pompeu Fabra University in Barcelona, the University of Bielefeld, the University of Plymouth, Imperial College in London, Aberystwyth University, the Beckman Institute Urbana-Champaign, the METU in Ankara and Technische Universität München.



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iCub Project www.iCub.org **Web** www.iit.it/icub
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Specifications

Height	104cm
Weight	23-25 kg
Sensors	Stereo Cameras, microphones, encoders, force/torque sensors, tactile sensors (capacitive) fingertips and skin on upper body and arms, gyroscopes, accelerometers
Actuators	Large joints as e.g. the shoulder (brushless motors, ~150W), small joints as e.g. hands (DC motors). 54 motors in total
Power	220/110V AC, tethered via 48-12V power supply
Computing:	On-board: 20 microcontroller boards for movement, 16 boards for sensors and a Pentium duo for data acquisition and synchronization. Off-board: a cluster with 30-40 cores and GPU processing and more if needed
Software	On-board: Debian Linux. Off-board: any of Windows, Linux, MacOS in any combination depending on the configuration/user needs. Software middleware controlling the cluster and the robot called YARP
Degrees of Freedom	54 motors controlling 76 joints
Structure and Materials	Mostly Ergal (aluminum alloy), steel and plastic
Cost	Latest configuration about 250.000 Euros
Year	Started 2004, first release 2008
Location	Genoa, Rome, Lyon, Paris, Barcelona, Munich, Bielefeld, London, Plymouth, Aberystwyth, Lisbon, Urbana-Champaign and Ankara

