

NAO



BOOST

YOUR ACADEMIC

PROJECTS

HIGHER EDUCATION & RESEARCH

EXPAND RESEARCH & LEARNING HORIZONS



Robotics is the fastest growing industry and most advanced technology used in education and research. The NAO humanoid robot is the ideal platform for teaching or researching in Science and Technology.

By using our NAO robotics platform, instructors and researchers stay current with major technical and commercial breakthroughs in programming and applied research.

FOCUS ON RESEARCH
WITH A READY TO USE
& AUTONOMOUS ROBOT

MOTIVATE STUDENTS

IMPROVE LEARNING
EFFECTIVENESS

TEACH A JOB-CREATING FIELD

WHY STUDY A HUMANOID ROBOT?

MAJOR INNOVATION & JOB-CREATING FIELD

After Computer and Internet, Robotics is the new technological revolution. With ageing population and labor shortage, humanoid robots will be one of the solutions for people assistance thanks to their humanoid shape adapted to a world made for humans. Educate students today using the NAO platform for opportunities in robotics, engineering, computer science and technology.

ROBOT FASCINATION

Humanoid robots have always fascinated people especially students with new applications and incredible inventions. Now technology has made a huge leap forward. Stemming from 6 years of research, NAO is one of the most advanced humanoid robots ever created. He is fully programmable, open and autonomous.

MULTIDISCIPLINARY PLATFORM FOR TEACHING & RESEARCH

Computer sciences, mechanics, electronics, and control are already at the core of the NAO platform. Our curriculum used in conjunction with NAO allows students to develop a structured approach to finding solutions and adapting a wide range of cross-sectional educational content. One example is for the instructor to assign students to program NAO to grasp an object and lift it. The assigned task is immediately clear to students. Why might NAO have a problem with the execution of the assigned task? What are the difficulties or obstacles that NAO is having? Students are naturally motivated to find answers to these questions.

ADVANTAGES OF USING NAO

FOR RESEARCHERS

- Ideal test platform for conceptual and theoretical models
- Autonomous platform for hands-on experiments about robot based researches such as personal assistance or monitoring
- Easy to program & conduct research through our Software Suite

FOR TEACHERS

- Higher women student enrollment
- Improvement of achievement & learning effectiveness
- Projects or labs based approach for teaching Robotics and Computer Science

FOR STUDENTS

- Hands-on experience by connecting theory with practice to discover a wide range of fields linked to robotics such as computer science, mechanics, electronics or control.
- Inspiring a high level of motivation & interest for engineer careers. For example: studying control to grasp objects or computing matrix & torso to get NAO moving become exciting projects
- Fostering team work, project management, problem solving and communication skills.

WORLDWIDE CUSTOMERS

HIGHER EDUCATION & RESEARCH

- University of Harvard
- MIT
- Telecom Paristech
- University of Bremen
- Tokyo university
- Zhejiang University
- University of Austin Villa
- University of Carnegie Mellon
- Sapienza, Roma
- University of Hertfordshire
- National university of Seoul
- National Taiwan university



INTEL ATOM
CPU EMBEDDED

UP TO 25 DEGREES
OF FREEDOM

TESTIMONIALS

WHAT TEACHERS SAY ABOUT NAO

“This is an excellent way to illustrate our curriculums. It enables us to show all about what is involving an intelligent machine in terms of mechanics, control, electronics and of course computer science.”

Soukalo Dembele,
Franche Comte University, France

“Nao is used in Education with student projects in image understanding [...]. The project attracts many students, and it nicely shows unexpected psychological effects, when humans directly interact with humanoid robots «in the loop»...”

Pr. Axel Pinz
Graz University of Technology, Austria

“Nao plays a central role in our research, all of our methods are implemented on a real or simulated NAO [...]. In particular the available walking behavior really evolved over the time and now provides a good basis for our research on humanoid navigation. Overall, Nao was very well received in our lab and by people visiting the lab.”

Humanoid Robots Lab.
Universität Freiburg, Germany

WHAT STUDENTS SAY ABOUT NAO

“It brings a little more fun to studies. It allows us to go beyond theory and to apply our knowledge.”

“I can see and test directly what I did. Projects we are making become interactive and tangible. Running programs on robot is impressive.”

“I discovered other ways to work than through computer. I would like to carry on in this field.”

SOLUTION FOR RESEARCH & HIGHER EDUCATION PRODUCTS



NAO H21 & NAO H25
HUMANOID ROBOT



NAO T14
TORSO ROBOT



NAO T2
TORSO ROBOT

NAO KEY FEATURES

- Vision and audio: text to speech, speech recognition, face detection and recognition, object recognition, sound detection and localization...
- Sensors: sonars, accelerometers, gyrometers, FSR, MRE, motors., cameras..
- Natural motion reflexes: anti self collision, resource manager, fall manager (NAO protects himself in case of fall), smart stiffness (power optimization during moves)

RESOURCES

EDUCATIONAL MATERIAL

DESIGN DOCUMENTS

SERVICES & ACCESSORIES

NAO-BASED LABS SESSIONS & PROJECTS EXAMPLES

PROJECT FOR STUDENTS

In universities or schools using NAO, students and teachers are developing projects such as: how to mimic a student's body posture, navigate through a room or recognize objects.

RESEARCH

Scientific research is being conducted in the following areas with NAO platform: robotics, mapping, object recognition, grasping, walking, motion, autism, human machine interaction / ethics, navigation in complex indoor environments, object category recognition & detection

LABS FOR COMPUTER SCIENCE/CONTROL

In computer science, use NAO platform to discover algorithmic logics basics or teach object oriented, embedded or real time programming... In control, use ankle to define the control law of a 2 DOF system or use NAO platform to define complex control mixing vision/motion/audio.

LABS FOR MECHANICS/ELECTRONICS

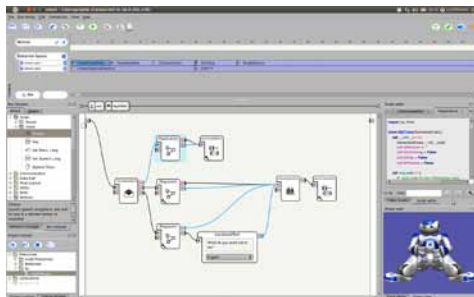
At beginner level, you can redesign basic mechanical parts using NAO CAD files as well as work on torque computation or sensors study. At advanced level, students can use their math skills to perform matrix computation to work on NAO kinematics...



SOFTWARE SUITE & SDK



CHOREGRAPHE
VISUAL PROGRAMING SOFTWARE

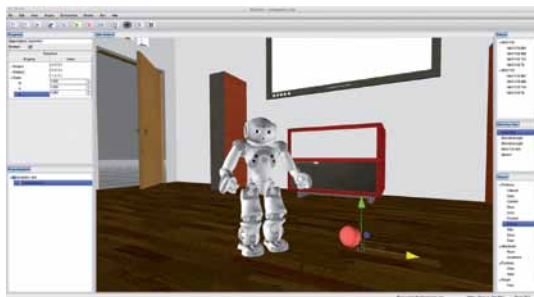


THANKS TO LIBRARY OF ACTION BOX, YOU CAN CREATE BEHAVIORS WITH A SIMPLE DRAG AND DROP OF BOXES!

Choregraphe enables researchers to program without mastering any code and lets students discover the general logic and the key concepts of programming. You can also introduce programming (C++, Python..) and explore various areas of research in robotics and investigate NAO's capabilities: vision, audio treatment, control, planning, navigation...



SIMULATOR
3D PHYSICAL SIMULATOR

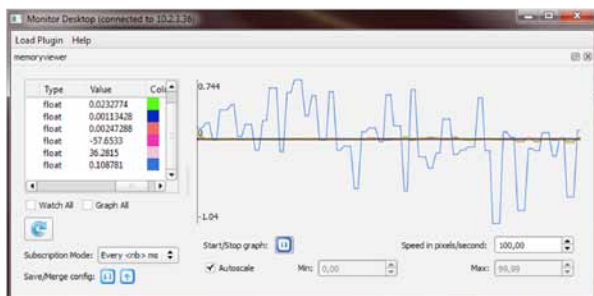


THIS 3D SIMULATOR ENABLES YOU TO PROGRAM NAO IN A VIRTUAL ENVIRONMENT AND VALIDATE BEHAVIORS

The 3D simulation engine allows you to test your developments on a virtual NAO without monopolizing the real NAO. This allows you to study differences between virtual world and real environment. You can modify the simulation workspace by inserting and modifying user defined objects.



MONITOR
ACCESS TO NAO'S DATA



MONITOR IS A DESKTOP APPLICATION GIVING ACCESS TO NAO'S SENSORS AND JOINTS DATA

You can easily measure and graph all data from NAO's sensors and joints. For example, you can illustrate closed loop control by graphing the angle command sent to a joint and the sensor position. You can even see the current used by the motors. And, it's essential to enable students to understand the basics concepts used in the various disciplines interlinked with robotics.



SOFTWARE DEVELOPMENT KIT
DEVELOPER TOOL



CROSS-PLATFORM/LANGUAGE -WINDOWS, LINUX OR MAC-C++ , PYTHON, JAVA, MATLAB, .NET, URBI

Our user-friendly and well documented SDK allows you to embed modules you developed into your robot and use them to create elaborate behaviors. The NAO SDK comes with the compilation and debugging tools you need. Our SDK is also compatible with many robotics development platforms and languages.



ROBOTS FOR BETTER LIVING

Aldebaran Robotics is a recognized world leader in the rapidly expanding field of humanoid robotics. Founded in 2005 with offices in France, China and the United States, Aldebaran launched the "NAO" robot which has become an internationally adopted platform used in education and research. More than 480 prestigious universities, labs and secondary schools worldwide are working daily with NAO.

For the future, Aldebaran has embraced the ambitious goal of developing humanoid robots for use by the general public. More than 150 people at Aldebaran, including 40% in R&D, are involved in the development and production of NAO and future robots.

Aldebaran believes that in coming years robots will positively impact our lives to the same extent as PCs and mobile devices did during the past 3 decades. Robots will change the way we learn, work and communicate. For example, a robotic companion to assist humans is no longer science fiction but a realistic answer to the requirements of an aging society. Aldebaran Robotics is developing practical solutions for everyday life by conducting research in areas such as autistic child therapy, human-robot interaction and personal robotics.



Discover exclusive testimonials on our YouTube Channel:
<http://www.youtube.com/AldebaranRobotics>



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