NICo – Neuro-Inspired Companion

*"Interdisciplinary research, drawing from robotics, artificial intelligence, neuroscience, psychology, and cognitive science, is a cornerstone to advance the state-of-the-art in **multimodal human-robot interaction and neuro-cognitive modelling**.*

*For this purpose, **we introduce NICO (Neuro-Inspired COmpanion),** an **Open Source** humanoid designed by the Knowledge Technology group in the University of Hamburg.*
NICo is a developmental robot that fills a gap between necessary sensing and interaction capabilities and flexible design. This combination makes it a novel neuro-cognitive research platform for embodied sensorimotor computational and cognitive models in the context of multimodal interaction. "

Photo Credit and Text (adapted): University of Hamburg, Knowledge Technology Group

A contributor to the Open Source NICo project, **Seed Robotics offers NICo as a fully assembled solution,** ready to start your research. If you wish to use NICo you don't have to build it yourself: we will build one for you, with Warranty and Support included.

Mechanical Features: Degrees of Freedom

10 Degrees of Freedom in the Torso (Head and Arms)
22 Additional degrees of Freedom in the Hands (under actuated, 8 motors)
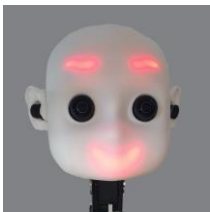

Facial Expression capability

NICo includes LED matrixes in its eyebrows and mouth capable of displaying a number of expressions from happiness to anger and surprise.

The open source code can be extended with user designed expressions.

Two 4K High Resolution Cameras in the Eyes

State of the art cameras and lenses which are capable of up to 60fps at 4K resolution (lower resolutions at higher frame rates also possible)
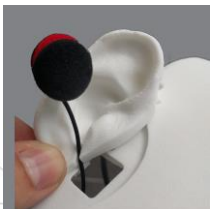
Professional Stereo Sound Capture System

Two microphones (one in each ear), allow for precise Stereo sound capture directly to your computer.
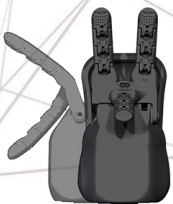
Seed Robotics RH4D Advanced Manipulators

Enable advanced grasping and sensing for exploration and learning scenarios.
Additionally, they complete NICo in its "humanoid" look, and can be leveraged in Human Robot Interface (Social) research as well.

Alternatively, NICo can be fitted with the Seed Robotics RH5D/RH7D Child size hands.

Python open source Framework

An open source framework in Python is readily available for NICo along with simulation models for V-Rep.

By relying on Python researchers gain access to a number of valuable tools and frameworks.

USB Interface on all modules

All modules of NICo (sound, vision, motor control, ...) come with convenient USB interfaces.
We chose not to include an embedded PC with NICo, to enable researchers to use their computers or dedicate a larger PC with adequate computing capability to handle advanced research frameworks.

The USB interfaces make it easy to change computers quickly and universally support a wide variety of systems.

NICo citation and original presentation:

Matthias Kerzel, Erik Strahl, Sven Magg, Nicolás Navarro-Guerrero, Stefan Heinrich, Stefan Wermter. NICO– Neuro-Inspired COmpanion: A Developmental Humanoid Robot Platform for Multimodal Interaction. Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). pages 113 - 120. Lisbon, Portugal. 2017.

Open Source Repositories:

CAD: https://github.com/knowledgetechnologyuhh/NICO-cad
Software: https://github.com/knowledgetechnologyuhh/NICO-software

For further information or to get a Quotation, get in touch via   18062020228@qq.com

You may also find out more about Seed Robotics and NICo at our website www.jingtianrobos.com