

# New book reveals the link between robot and child development

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Robots that learn and acquire motor and cognitive skills in the same way that human babies do are now a reality according to a new book jointly written by an expert at Plymouth University.

Angelo Cangelosi, Professor of Artificial Intelligence and Cognition, says that research conducted over the past seven years in the field of developmental robotics has revealed many parallels with the study of child development.

In a new book – *From Babies to Robots*, published by MIT Press in the United States – written with Matthew Schlesinger, Associate Professor of Psychology and Adjunct Professor of Electrical and Computer Engineering at Southern Illinois University, Professor Cangelosi has considered a variety of topics including manipulation and locomotion, face recognition and perception of space, and language and abstract knowledge.

He said:

"Developmental robotics is a collaborative and interdisciplinary approach to robotics that is directly inspired by the principles and mechanisms observed in children's cognitive development.

"It builds on the idea that the robot, using a set of intrinsic developmental principles regulating the real-time interaction of its body, brain, and environment, can autonomously acquire an increasingly complex set of sensory, motor and mental capabilities. In the book, we've drawn on insights from psychology, computer science, linguistics, neuroscience, and robotics to provide the first comprehensive overview of a rapidly growing field."

*From Babies to Robots* is based upon the legacy of robotics research that Professor Cangelosi has led or been involved with through Plymouth University's highly-regarded Centre for Robotics and Neural Systems. This included the multi-million pound, pan-European ITALK project – Integration and Transfer of Action and Language Knowledge in Robots – that used a 'baby robot' called iCub.

Over the course of the project, and subsequent research work, the [iCub robot](#) in Plymouth has developed the linguistic capabilities of a two- to three-year-old child, going from the learning of simple words in order to name objects, to the capability to create short sentences combining object names, adjectives and verbs. iCub can now also understand the meaning of numbers, and uses finger-counting strategies to add numbers together. This is possible because it can use its body (fingers, pointing gestures etc) to understand abstract concepts.

Professor Cangelosi added:

"Through the likes of the iCub project, and ALIZ-E, which used robots to communicate with children in hospitals and schools, Plymouth University has become a hub for world-class robotics researchers, bringing in over £5 million in national and international grants. It's a real success story for the region."

Provided by University of Plymouth

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