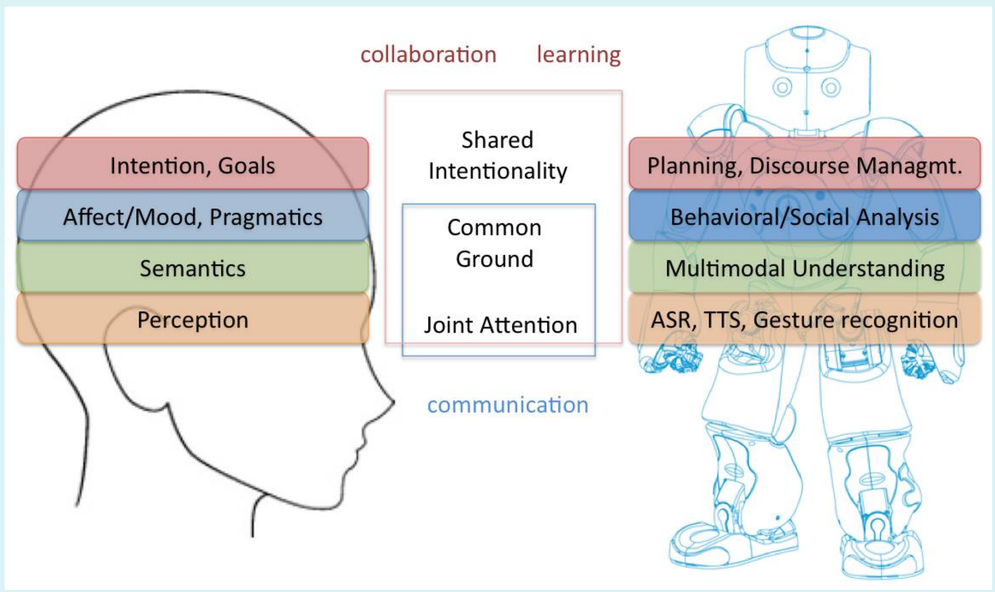
Child-Robot Communication and Collaboration

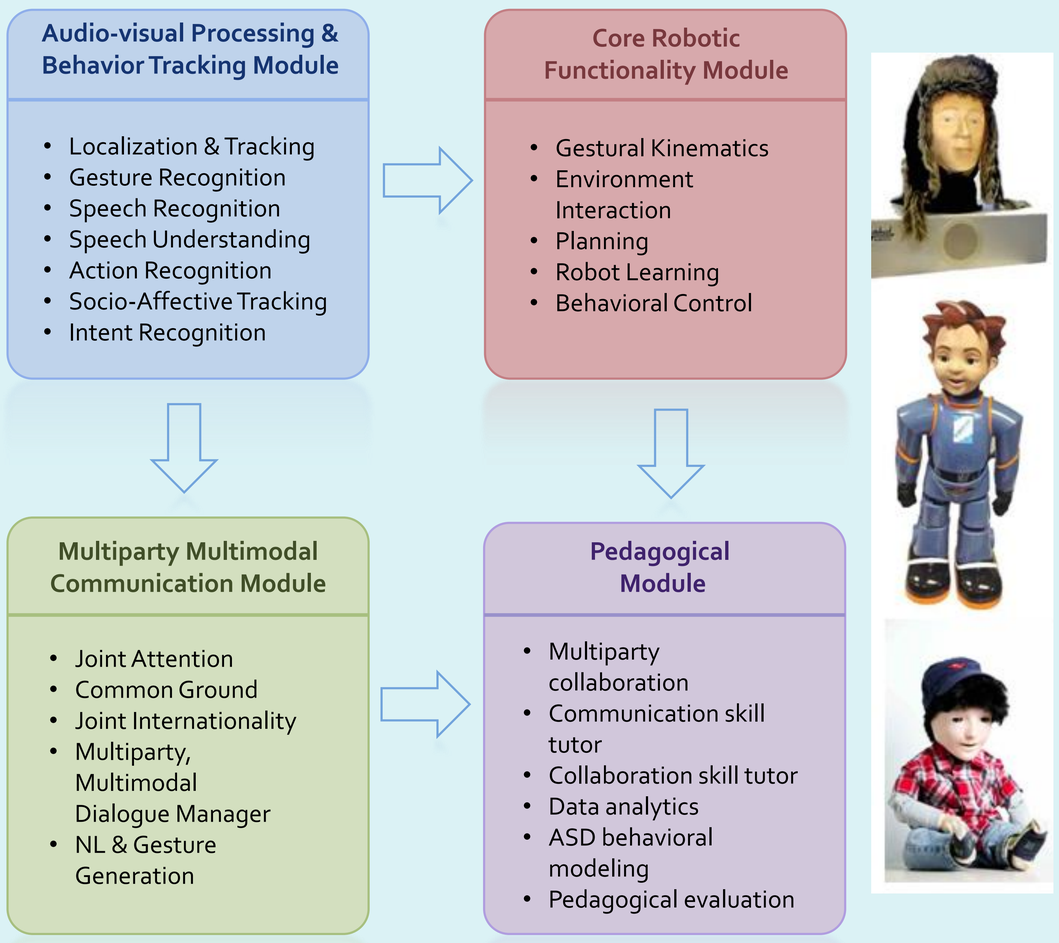
Edutainment, Behavioural Modelling and Cognitive Development in Typically Developing and Autistic Spectrum Children (2016-18)

http://www.babyrobot.eu

Challenge

In the BabyRobot project we model human-robot communication as a three-step process: sharing attention, establishing common ground and forming shared goals. BabyRobot ambition is to create robots that can establish communication protocols and form collaboration plans on the fly having impact beyond the consumer and healthcare application markets.





Goals

1. Our main goal is to create robots that analyze and track human behavior over time in the context of their surroundings (situational) using audio-visual monitoring in order to establish common ground and intention-reading capabilities.
2. We focus on the typically developing and autistic spectrum children user population in order to define, implement and evaluate child-robot interaction application scenarios for developing specific socio-affective, communication and collaboration skills.
3. Breakthroughs in core robotic technologies are needed to support this research mainly in the areas of motion planning and control in constrained spaces, gestural kinematics, sensorimotor learning and adaptation.

Application Scenarios

Natural child-robot interaction: showcase the joint attention, common ground and shared intentionality modules.
Communication skill development & learning: via tactile and language games.
Collaboration skill development & learning: via dyadic and triadic interaction, using the robot as a mediator.

Main Outputs

Platforms: A new generation of robotic platforms with advanced communication and collaboration functionalities.
Software: Open-source software containing the majority of the advanced human-robot communication modules.
Data: Annotated data (anonymized) used for training the audio-visual processing, behavioural informatics, speech and gesture interaction models will be released with a CreativeCommons license.

Target Markets

1. Stand-alone home products.
2. General education (schools), special education, museums/exhibits.

Impact

BabyRobot technologies will act as enablers, lowering the barrier to entry for Europe's SMEs, improving the quality and cost-effectiveness of prototyping novel human-robot communication and collaboration scenarios.

Partners

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