Cognitive Robotics

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ABSTRACT. Cognitive robotics, also known as artificial cognitive systems research, regards the use of bio-inspired methods for the design of sensorimotor, cognitive, and social capabilities in autonomous robots. Other designations have been proposed in the short history of cognitive robotics which spans approximately the last 15 years, as for example, Epigenetic Robotics, Autonomous Mental Development (AMD), or Cognitive Developmental Robotics (CDR). Robots are required to learn such capabilities (e.g., attention and perception, object manipulation, linguistic communication, social interaction) through interaction with their environment and via incremental developmental stages. The biological and cognitively inspired methods and design principles are derived from studies in cognitive and developmental psychology, and neuroscience. In addition to the technological aim of designing autonomous robots, cognitive robots are also widely used as embodied computational models investigating the organization of learning and cognition within the cognitive and neural sciences. A growing field of cognitive robotics has taken a developmental (i.e., ontogenesis) flavor in recognition of the fundamental role of learning in the final performance of biological cognitive systems.