

## Implementation of Cognitive Control for a Humanoid Robot

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### ABSTRACT OF TALK

Engineers have long used control systems utilizing models and feedback loops to control real-world systems. Limitations of model-based control led to a generation of intelligent control techniques such as adaptive and fuzzy control. Human brain, on the other hand, is known to process a variety of inputs in parallel, ignore distractions to focus on the task in hand. This process, known as *cognitive control* in psychology, is unique to humans and some higher-class animals. We are interested in implementing such cognitive control functionality in robots.

In this presentation, I will discuss our most recent multi-agent-based hybrid cognitive architecture for a humanoid robot and the progress made on the implementation of cognitive control functionalities using attention, affect, working memory and feedforward model. Key concepts will be illustrated using examples such as sensory-motor association learning through working memory training, internal rehearsal using a feedforward model, and a self-motivated internal state-based action selection mechanism.