

# The role of arousal in two-resource problem tasks for humanoid service robots

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**Abstract—** A computational architecture of emotion is presented which grounds a component of an appraisal cognitive model into the homeostatic processes of a humanoid robot. The focus of the present work entails a ‘grounding’ of the arousal component of the Pleasure Arousal Dominance emotion space into the electrical energy processes of an iCub robot. Key variables and performance criteria for robotic energy autonomous behavior in interaction with human are discussed. We show that our bio-inspired affective architecture offers viable basic cycles in exemplar “two-resource problem” test-bed scenarios for a real iCub robot. The expression of the robot’s emotional state and its role for the efficient interaction in the proposed two-resource problem task is discussed and experimental designs are presented.

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