Personality Matching to Generate Empathy in Human-Robot Teamwork

Thi-Hai-Ha Dang and Adriana Tapus
Robotics and Computer Vision Lab
ENSTA-ParisTech
828 Blvd des Marechaux, 91762, Palaiseau, France
Email:{tdang; adriana.tapus}@ensta-paristech.fr

Many researches in robotics focus on human-robot cooperation, however, none has studied the potential positive impacts of Personality Matching in Human- Robot Teamwork. This research focuses on investigating: (1) the correlation between the human's physiological states induced by the Human-Robot Cooperation task and specific events (e.g., deliberately demolishing a constructed object), (2) the relationship between human-robot personality matching and task performance, and (3) the relationship between human- robot personality matching and empathy. In order to study the inter-relationship between empathy, personality matching, and task performance, we plan to conduct a two-phase experiment:

Phase 1: Participants will be asked to watch two videos showing a human and a robot cooperating to construct different Lego objects and choose the one they preferred. The robot's behavior is either challenging (challenging language, high pitch and volume) or empathetic (gentle and supportive language, medium pitch and volume).

Phase 2: Participants will be asked to cooperate with the robot in the constructions of two objects. For the construction of the first object, the robot exhibits a neutral behavior, while for the second construction the robot exhibits the behavior chosen in Phase 1. The human helps the robot in the construction task by handing the Lego bricks. Almost at the end of the task the robot will deliberately demolish the object (showing as unintentionally) or will lose from the hand one brick and ask for the help of the human-user. Several hypotheses are tested. For the experiments, Meka robot is used(see Figure 1).

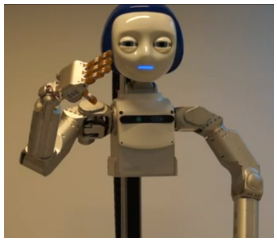

Fig. 1: Meka: A highly expressive robot used for the experiments