



# **NEWHRI: Unifying Characteristics of Research in Human-Robot Interaction**

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## **What characteristics unify and should be common to all areas of HRI research?**

- **Safety**
  - Humans and robots co-exist in the same space
  - Impossibility to model all reactions and behaviours
- **Awareness**
  - Bidirectional Consciousness of Capabilities
  - Different kinds of interaction between Humans and Robots
- **Evaluation**
  - Safety, faithfulness, awareness, and other important aspects of HRI evaluation with accurate and rigorous criteria.

## What properties typify novel and significant research in HRI?

- Inherent safety
  - A must under “human-in-the-loop” conditions
  - Affects mechanical design, control techniques, motion planning, ergonomics, ...
- Cognitive level
  - Human - Robot communication
    - capabilities
    - channels available
  - Robot behaviour and Learning skills.



## **How can we further synergistic research between HRI and the broader robotics community?**

- Joint goals:
  - Promotion of safety standards
  - Multidisciplinary approach to challenges
  - Study of quantitative evaluation criteria
- In addition, other factors like economic or ethical motivations also drive this new generation of robots

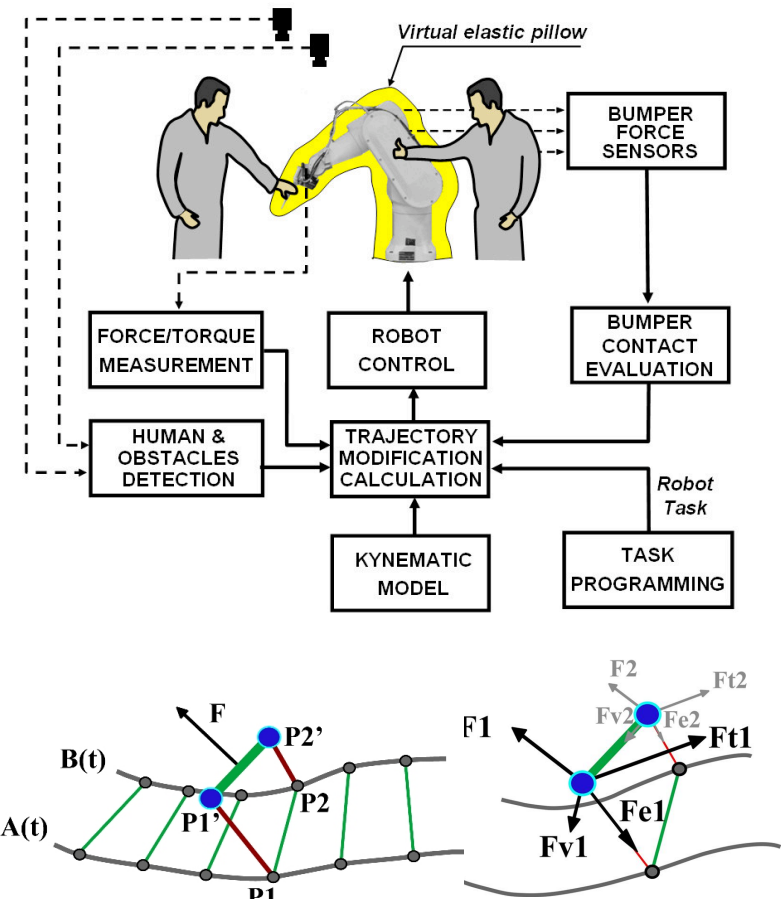


## Robot Behaviour Models in Human Robot Interaction

- Use of virtual constraints and behaviour models to:
  - enhance human-robot cooperation (HMCS)
  - enable natural response to human interaction
  - increases task safety
  - enable higher integration possibilities

# Robot Behaviour Models in Human Robot Interaction

- Interacting with robots while they are executing a task
  - guiding them manually
  - interacting through contact on the robot body
  - the detection of humans in the robot proximity
- perturbation by introducing virtual elastic and viscous forces.





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