NSF NRI 2.0 - FND: Immersive whole-body teleoperation of wheeled humanoid robots for dynamic mobile manipulation

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https://publish.illinois.edu/robodesign/

Motivation: ***Emergency responders get injured or die due to physically demanding labor. Although autonomous robots could help, they lack the ability to coordinate their body to manipulate objects.***

Scientific Impact:

- ***Contributions to whole-body haptics.***
- ***Principles for teleoperation of dynamic whole-body motions.***
- ***Efficient algorithms for safe shared autonomy.***

Impact on society:

- ***Protect the life of human workers.***
- ***Enable ubiquitous collaborative robots.***
- ***Create of the next generation of robotic first responders.***

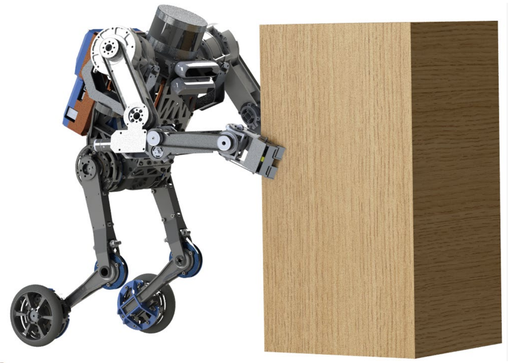
Impact on education & outreach:

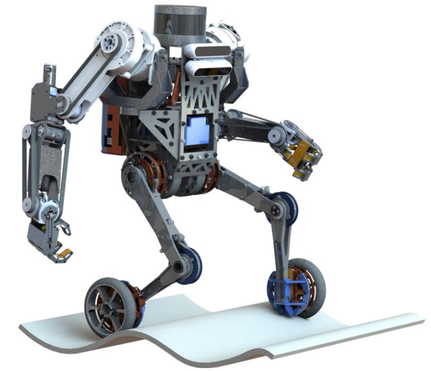
- ***K-12 Robotics Summer Camp.***
- ***Public demonstrations.***
- ***Workshop on teleoperation for dynamic physical tasks.***

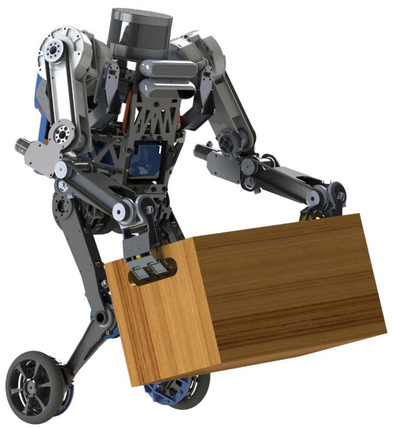
Our approach: ***employ bilateral whole-body teleoperation:***

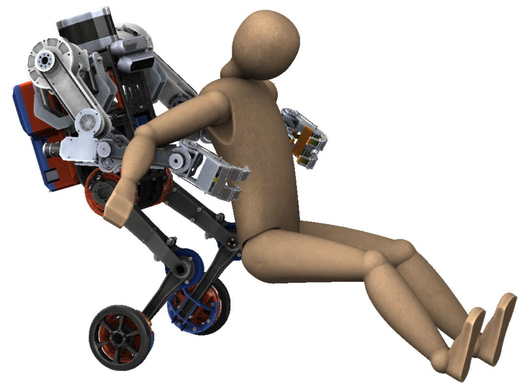
- ***Aim 1:*** ***Implement whole-body bilateral teleoperation Human-Machine Interface and the wheeled robot SATYRR.***
- ***Aim 2:*** ***Develop whole-body bilateral feedback teleoperation strategies for physical tasks.***
- ***Aim 3:*** ***Create algorithms for safe teleoperation using shared autonomy.***

Whole-body Human-Machine Interface









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