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Case ID:M13-025P
Published: 8/19/2013

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Human-Robot Mechanical Coupling with Intrinsic Safety Detachment Function

Currently under development are several advances in robotics technology that allow humans to connect with robotic devices such as exoskeletons and physical rehabilitation machines. Robots are currently in development for use in the Military, Medical, Industrial and Private sectors. However there is a problem facing the human users attempting to couple themselves to these robotic devices. The current coupling options consist mainly of straps or boots and are very unsafe and in the case of a robotic malfunction the user can be severely injured.

Researchers at ASU have developed a solution to this problem in the form of this Human Robot Mechanical Coupling device. Using highly powerful magnets with a high force to size ratio, and housed in a way that allows for adaptable solutions, the Human-Robot Mechanical Coupling device provides a way for a human user to attach himself to a Robot in a safe and reliable way. Using this device the Human user can intrinsically detach from the robot if it begins to malfunction. This is because the product has been designed to use magnets that allow for quick release. This product is highly adaptable and couples to suit any mounting option/robot compatibility, human arm, and application as determined by maximum pull force. The end user can even select range and resolution of adaptability.

Potential Applications

- Military Exoskeleton
- Medical Rehabilitation Equipment
- Private usage for medical assistance
- Industrial Robots and Exoskeletons Prosthetics

Benefits and Advantages

- Safe-Hands Free de-coupling and coupling ensures enables safe use of robots
- Intuitive- Easy to use
- Quick-Easily attaches and detaches in seconds
- Low-Cost-Inexpensive Parts and assembly make it cost effective to product
- Durable-Made from strong parts, built to last
- Reliable-Simplicity of design makes it very dependable
- Compatible-Easily integrated across multiple platforms. Adaptable and easily marketable

For more information about the inventor(s) and their research, please see Panagiotis Artemiadis' directory webpage